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Pedagogy in Performance: An Investigation into Decision Training as a Cognitive Approach to Circus Training

Jonathan Paul Burtt M.A.

A Thesis Submitted to the Western Australian Academy of Performing Arts Edith Cowan University In Total Fulfilment of the Requirements for the Degree of Doctor of Philosophy March 2016

Abstract

This research project represents the first formal research conducted into the potential application of Decision Training in an elite circus arts school environment. The research examines the effects of the introduction of Decision Training—a training model developed for sports applications—into the elite circus arts training program at the National Circus School (NCS), a key circus arts school in one of the world's most vital circus domains, Montreal, Quebec, Canada.

Decision Training, a cognitive-based training model, has been shown through extensive sports-based research to support the development of decision-making ability and self-regulatory learning behaviour, both of which are fundamental for the long-term retention and application of physical skills. A key research aim was to investigate whether Decision Training had the potential to enhance existing teaching practice at the NCS.

This research investigates how this cognitive training model—developed for use in the world of competitive sports—functions in a performing arts context in which not only physical and technical skills are trained, but also elements connected with performance, such as aesthetic expression and the creation and development of new performance material.

A qualitative action research methodology was employed, consisting of three reflection–action cycles with three case studies of student–teacher pairings. Data collection took place over an extended training period at the NCS from November 2011 to April 2012. Observation, interviews with teachers and students, and group discussions were used to collect data and to provide the impetus for the Decision Training interventions for the three action research cycles.

This qualitative study reveals how teachers implemented the three-step Decision Training model and how students responded to these teaching interventions. This was done through an action research process investigating the lived experiences of the participants involved in each case study.

The research findings indicate that incorporating a cognitive training method such as Decision Training into circus pedagogy has the potential benefit of giving students the means of acquiring important skills such as effective decision making in performance situations, and self-regulatory behaviour such as the ability to effectively self-assess their performance. Teachers have the potential to benefit by not having to be the sole providers of feedback or motivation, allowing the rapport between student and teacher to become collaborative and creative. The research findings show that the effectiveness of the Decision Training interventions was influenced by the different learning and teaching backgrounds and styles of the student–teacher pairings, and the different ways in which the teachers integrated Decision Training into their existing teaching practices.

The research findings led to the proposal of an "integrated" pedagogical approach based on a combination of Decision Training and direct teaching. This "integrated" pedagogy would enable a teacher to use the cognitivist, student-centred learning approach of Decision Training to develop self-regulation and effective decision making in students, but switch to aspects of direct teaching at appropriate times: for instance, when a student needs to be directly aware of safety issues or has little foundational knowledge in a circus discipline; in the lead-up to a performance showing; or during the period in which a student is adjusting to the new cognitivist learning and teaching environment.

Recommendations are made for the gradual phasing in of Decision Training into the main training program at the NCS, and implications for future research are discussed.

Signed Statement

I certify that this thesis does not, to the best of my knowledge and belief:

i) incorporate without acknowledgement any material previously submitted by a degree or diploma in any institution of higher education;

ii) contain any material previously published or written by another person except where due reference is made in the text of this thesis;

iii) contain any defamatory material.

Signed:

Jonathan Paul Burtt

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Dedication

This thesis is dedicated to my doctoral supervisor, Dr Maggi Phillips, who passed away on March 31st, 2015.

As a teacher, researcher and scholar, Maggi played a vital role in dance and performance in Australia. Maggi, who was also my supervisor for my master thesis, had a deep love of circus arts from her days as a performer when she performed with many circuses in both Europe and South America.

Pedagogy in Performance: An Investigation into Decision Training as a Cognitive Approach to Circus Training

Chapter 1: Introduction

1.1 Overview and Scope of the Thesis

This research brings together two things about which I am passionate, namely circus and teaching. The research is driven by my desire to investigate how to create better training conditions for students training in the physical arts, and how to encourage the development of the mental and physical foundations necessary for long, productive and successful careers. I am interested in the creation of learning environments that encourage students to think for themselves and be resilient, innovative and creative while developing physical expertise.

This thesis is a research project exploring pedagogy in circus arts. It investigates the effects of introducing a sports training model, known as Decision Training, into an elite circus arts training program at *École Nationale de Cirque*, or the National Circus School (NCS) in Montreal, Quebec, Canada. The NCS is at the forefront of circus arts training, with an interest in innovation and excellence. The school also has a strong research program with an interest in practice-based research into circus training.

Decision Training is a teaching model that formalises a cognitive approach to the pedagogy of physical skills, which, as will be discussed, offers an alternative to the dominant behaviourist mode of teaching in the circus arts. I investigated Decision Training through a field study of three case studies of student–teacher pairings over the course of a training year at the NCS.

One aspect of the Decision Training system, a Decision Training tool known as "hard first" instruction, had previously been successfully trialled by *Cirque du Soleil* in 2000, and this led to its inclusion in the artists training program, where it has been used successfully ever since (Vickers, 2007, p. 225).

My research builds on this *Cirque du Soleil* initiative and represents the first formal research project focused on investigating the full Decision Training model in an elite circus arts school. This offers the opportunity to contribute a new body of knowledge to an emerging field of pedagogical research in circus training.

Traditional behaviourist training modalities remain the dominant form of training in the circus arts and in many other physical training programs including

1

gymnastics, and much of dance training. Behaviourist learning theory aligns learning with conditioned behaviour based on work of the psychologist BF Skinner (1954) whose ideas were influential in education in the 1950s and '60s. In behaviourist learning theory, a change in externally observable behaviour is initiated by the teacher through the use of reinforcement to elicit the required learning behaviour. Positive behaviour is rewarded or "reinforced"; negative behaviour is "punished" (Skinner, 1954). Information is broken down and taught in small bits progressing from one bit of information to the next in a linear manner. Once a skill is mastered, the student progresses in a linear manner to the next skill. The teacher is the dominant figure through which access to information is provided. In behaviourist learning the student is the passive receiver of information (Anderson et al., 1994, p. 10).

Cognitivist learning theory, influenced by the work of psychologists Jean Piaget (1973) and Lev Vygotsky (1978), stands in direct contrast to behaviourist teaching methods. In cognitive learning theories, students are actively involved in their learning through the mental effort of problem solving. Cognitive learning approaches turn the focus away from the teacher as the external motivator for learning and place emphasis on the student as the intrinsic motivator of their own learning. This has led to a focus in education on student-centred learning where students learn how to problem solve, with a pedagogical focus on training the use of the student's mental processes to seek out information (Weimar, 1995, p. xviii). This cognitive approach to physical training, despite having been shown to be successful in other fields (Vickers et al., 1999; Raab et al., 2005; Chambers & Vickers, 2006), has not been widely adopted in elite physical training in circus, where behaviourist teaching is still widely used.

The current research seeks to explore the effects of a training model that focuses on a cognitive approach to training and performance in the context of an elite physical training institution. Exploration of the potential of cognitivist pedagogies within circus arts training is long overdue. In undertaking this research project I wanted to explore not only whether Decision Training can make a contribution to the more effective learning, retention and application of motor skills, for which it was originally designed, but also whether it has the potential to contribute to the development of the higher levels of selfefficacy, self-regulation and effective decision-making skills that are now increasingly vital for the contemporary circus artist.

The fieldwork for the NCS research project took place from November 2011 to April 2012. The project was the result of an international research partnership between

the Western Australian Academy of Performing Arts (WAAPA), which is part of Edith Cowan University (ECU) in Perth, Western Australia, and the NCS. The NCS also applied to the Association of Private Colleges of Quebec (APCQ) for a PREP (Program for Research and Pedagogical Experimentation) grant to facilitate the involvement of the teachers in each case study and also the guidance of my associate supervisor, Dr Sylvain Lafortune.

Dr Lafortune is an artistic advisor at the NCS and has a great deal of experience in teaching performing arts practice to elite-level circus students. He is an internationally recognised dancer, an expert in dance partnering, a choreographer and a director of both dance and circus performances. As this was a research partnership between WAAPA and the NCS, two members of the NCS staff were also involved. Head of research, Patrice Aubertin, and artistic councilor, Sylvain Lafortune, were involved in focus group meetings with the teachers, and were also involved with me in the three-track approach to analyzing the interviews which served to find commonalities in the results from which I was able to construct my own detailed research findings. Sylvain Lafortune was also involved in some of the interviews, particularly the interviews with the Case Study 3 teacher which were conducted in French. Patrice Aubertin, in his position as head of research and teacher training at the NCS, was also able to negotiate and facilitate the administrative logistics of the project taking place within the normal teaching schedule of the school.

With respect to my own background, I am a practice-based artist, researcher and an internationally recognised teacher in dance and physical theatre. I was a lecturer in dance and related physical disciplines at the WAAPA for over 10 years. I have taught masterclasses and workshops in numerous countries including the United Kingdom (UK), Canada, India and Australia. Recent international masterclasses include workshops for professional circus artists for *En Piste*, the Circus Arts National Network of Canada, and masterclasses in movement for theatre with the masters students in theatre studies at the Royal Holloway, University of London. I have an MA in circus arts based on my dissertation on the Indian yogic rope form *Mallakhamb*. I am an NCS-trained, advanced-level circus arts teacher (Trainer in Circus Arts, 2011), a certified hatha yoga instructor and a *Cirque du Monde*-trained social circus instructor and trainer. I was NCS researcher-in-residence in 2011–12.

I am currently a lecturer in dance and performance studies at Macquarie University in Sydney, where I have been working since 2013. Prior to commencing this PhD, I was a director and co-founder of the multiartform circus company, Skadada, in Perth. Skadada toured internationally to public and critical acclaim in China, Taiwan, India and Singapore, and throughout Australia, and represented Australia twice on diplomatic cultural initiatives showcasing the best in Australian performance in India and China. I co-directed Skadada's performance company and also devised and directed its circus arts training program. He is also associate editor of *The Routledge Circus Studies Reader* (Tait & Lavers, 2016).

As a place to explore the introduction of a cognitive training method to elite circus artists, Montreal was a compelling choice as it is not only the home of the NCS—one of the world's most established and respected circus schools—but also is home to some of the world's most successful circus companies, including *Cirque du Soleil*, *Cirque Éloize* and "the 7 Fingers" (*Septs Doigts de la Main*), along with many other smaller circus companies such as *Cirque Alfonse*, the Re-Circle Collective and *Machine de Cirque. Complètement Cirque* is a major international circus arts festival that takes place in Montreal annually.

My interest in researching new approaches to training in the circus arts was supported by the head of research at the NCS, Patrice Aubertin, and resulted in my appointment as NCS researcher-in-residence 2011–12, and the creation of an international research partnership between ECU and the NCS to enable this research project to take place. In my role as researcher-in-residence at the NCS, I was able to spend some time prior to the project's data collection period observing and reflecting on a variety of teaching practices already being used at the school.

The Decision Training project was driven by the potential of the research to yield new approaches to teaching practice and learning outcomes in ways that could be of benefit to teachers, students, circus training institutions and the circus arts industry as a whole. In addition, the research could also inform new approaches to the pedagogy of performance in other performing arts domains.

This research could potentially deepen teaching practice by adding new tools; leading to better learning outcomes and more productive interactions between teachers and their students. Students have the potential to benefit from being exposed to a teaching approach giving them increased agency in the learning process, offering them tools to learn how to be proactive and informed participants in their own learning—in effect collaborating with their teachers. This in turn had the potential to release teachers from the traditional pressure of being the sole motivator of the student, and the sole source of assessment and knowledge. This addresses the dominant focus on training the physical aspects of a specific circus discipline, to include training the mental processes that lead to the appropriation of highly developed learning and decision-making skills, and the development of self-regulated behaviour, self-efficacy and intrinsic motivation. In a diverse and rapidly changing industry such as circus, these life skills are as important as technical and artistic mastery. They are, in fact, essential skills that schools need to develop in their students, so that graduates can function as resilient and productive members of the circus arts community, and the wider performing arts community, over a lifetime of practice.

The combination of trialling within a new arts context a training method that based on a substantial body of supporting evidence—had already proven itself within sports training, the opportunity to address the research issue *in situ* at the NCS, and the support of research partners ECU and the NCS (as well as the APCQ), made a compelling case for moving forward with the project. A sports-based training model was a valid choice as circus arts and sports training and performance have some overlaps in their practices, and many circus students come into circus training from sports backgrounds. Unlike some other performing arts where training and performance is weighted more to aesthetic and creative practice, circus is based on mastery of physical skills performed in aesthetic and creative ways. In addition an adaption of a Decision Training teaching practice called "hard-first" had been introduced at Cirque du Soleil in 2000 precisely to address the issue of performance outcomes of their new recruits for shows.

This was a very localized action research project taking place in a specific elite circus school, not a community circus school for example, therefore the research was limited by the specific parameters of elite circus training. Being an action research taking place in an elite training institution, the scope of the thesis was purposefully limited to an investigation of physical training within the context of the school's stated aim of training students both technically, and aesthetically and creatively at the highest level (National Circus School, 2015). Socio-cultural issues such as how gender, ethnicity and other cultural factors affect learning and teaching in the school, while acknowledged, are outside the scope of this thesis.

1.2 Research Aims and Questions

It is a radical idea to introduce a cognitive approach such as Decision Training into the field of circus arts, because it proposes a whole new way of thinking about circus pedagogy and represents an alternative to the current dominant form of teaching in the circus arts. This research project is an innovative and exciting initiative because it represents the first time an introduction of the full Decision Training model has been investigated in a circus school or, to my knowledge, in any elite performing arts school.

The aim of this research, therefore, was to introduce a teaching system representing new ideas and offering alternative approaches to teaching circus arts.

My research questions, which addressed the process of introducing Decision Training to the NCS, are:

- Does the introduction of Decision Training have the potential to enhance teaching practices at the National Circus School?
- What aspects of learning and teaching theory have implications for the use of Decision Training in a circus arts context?
- How can teachers effectively apply Decision Training in a circus arts training environment?
- In what ways can Decision Training be introduced into the main training program of the National Circus School?

The exploration of these research questions through the theoretical and practicebased components of this thesis will lead to a discussion of research findings and a series of recommendations in relation to the potential of Decision Training for use in the NCS program.

1.3 Research Problem

The problem addressed by this research is that there is a lack of cognitive approaches to pedagogy in the circus arts, generally across the field, and specifically at the NCS, as was recognised by the institution through its interest and support for this research project. The reason for this is that elite-level circus arts training programs are focused primarily on the teaching of technical and artistic skills using direct "behaviourist" training practices.

Behaviourist training (sometimes termed "direct training") concentrates on developing direct association between an external stimulus (e.g. a direct instruction to perform a set task) and an externally observable response action (e.g. success or failure in performing the task) through the use of repetition. In effect, observable physical behaviour becomes the only marker for progress in the learning of a physical skill. Exercises are repeated until a particular target motor skill is mastered by the student, at which point the teacher moves on to the next set of exercises, which are targeted at the next level of difficulty. Behaviourist practices are used widely in the competitive sports training domain, specifically in elite gymnastics training, which has influenced the way circus arts are taught. In fact many circus teachers are ex-gymnastics teachers. With this direct training, skills are learnt in a linear repetitive fashion from easy to difficult; a high level of direct and immediate feedback is used; students are externally motivated by the teacher; and instruction is directed primarily on the body, and the physical reproduction of correct form.

With this style of direct teaching, students can easily become disengaged from the learning process, relying on the teacher to drive the process, which is one of the reasons why it is no longer the primary form of teaching used in general education: "Whether viewed as an open revolution or simply a gradual evolutionary process, there seems to be the general acknowledgment that cognitive theory has moved to the forefront of current learning theories" (Ertmer & Newby, 1993, p. 51). One of the reasons why behaviourist teaching is still used in circus arts is that the behaviourist method has been shown to produce noticeable physical results over the short term (Vickers, 2007; Schmidt & Lee, 2011). In circus arts training there is often pressure on teachers to produce results quickly over the short time frames necessary for examinations and assessment, and this short-term approach to achievement of skills is best served by behaviourist training.

The problem is that when this behaviourist approach is applied to a performing art such as circus arts, it does not take into consideration the necessity of providing the student with strategies that will enable them to retain and apply these skills over the long term. Students of a performing art such as circus need to be able to graduate and go forward into their careers and thrive in a company situation where there may not be the same level of support in place as in a circus school: for example, in all probability, there will not be regular close supervision of training, one-to-one teaching and dedicated artistic advisors. The behaviourist teaching practice primarily used in the circus arts now flies in the face of results from a large body of sports-based studies, which since the 1980s and 1990s has been proving the effectiveness of cognitive teaching strategies in longer-term retention of skills, and also in developing the ability to make decisions in performance situations (Shea & Morgan, 1979; Del Rey 1982; Lee & Magill, 1983; Salmoni et al. 1984; Goode & Magill, 1986; Gabriele et al., 1987, 1989; Del Rey et al., 1987; Magill & Hall, 1990; Lee, Swinnen & Serrien, 1994; Schmidt & Lee, 1999; Vickers, Livingstone et al., 1999; Vickers, Reeves et al. 2004; Raab et al., 2005; Chambers & Vickers, 2006; Wulf et al., 2007).

This body of research, which provides the theoretical and practice-based foundations of the Decision Training model, shows how cognitive teaching practices have better outcomes than behaviourist teaching practices because they promote a "permanent change in athlete performance over time" (Chambers & Vickers, 2006, p. 185).

One of the major challenges for circus arts institutions such as the NCS is to match graduate capabilities with the requirements of the rapidly changing performance contexts of current contemporary circus arts practice. Contemporary circus now encompasses a range of work in which traditional circus skills are hybridised with visual and physical theatre, performance art, contemporary dance and street theatre: "The first thing that comes to mind is the fundamental interdisciplinarity of circus, the hybridity of the genre" (Leroux, cited in *The art of contemporary circus*, 2014).

The diversity of career trajectories in circus arts is reflected in the wide range of areas in which graduates are finding employment. Circus artists now work in physical theatre companies such as James Thierry's company, *La Compagnie du Hanneton*; traditional circuses such as Ringling Bros. Circus in the United States (US) or the Swiss national circus, *Circus Knie*; or in contemporary circus arts companies that may combine circus and contemporary dance, such as the 7 Fingers; companies that include physical theatre, such as in *Cirque Éloize*'s productions with the Italian theatre director Daniele Finzi Pasca, No Fit State in the UK or Circa in Australia. Historically, circus has always been a hybrid interdisciplinary art form but, in recent years, circus arts graduates are now appearing in works that span an ever-increasing spectrum of performance practice. Students are often required to collaborate on the development of a work, and to sustain their career working from project to project.

I was interested to explore, therefore, whether pedagogical strategies such as Decision Training can offer approaches to address the need for circus graduates to develop the high levels of decision making, self-regulation, intrinsic motivation and self-efficacy needed to thrive and survive in this increasingly diverse circus arts domain. This research will build on a growing interest in learning and teaching within the circus arts. At a local level, in the context of this research project, the NCS is contributing to the development of critical discourse about training in a number of ways. In the teacher training courses at the NCS, there is an extensive theoretical component on the subject of teaching practice—something from which I myself benefitted when studying in the school's advanced-level circus arts trainer program, the *Formation des Formateurs*.

Patrice Aubertin, NCS's head of research and teacher training, who set up the inhouse teacher training programs at school, has introduced new information coming out of sports science, and also performance pedagogy including some aspects of Decision Training, into these courses (Arendasova, Aubertin et al., 2015). The need to provide new pedagogical modalities in the trainers' program has been one of the catalysts in the development of a culture of research at the school. This project provided an ideal learning and teaching research initiative from the NCS's perspective because of the potential for the research to test the effects of Decision Training in the "real world" conditions of training at the school, and then be able to feed back the research findings into the teacher training programs.

1.4 Overview of Decision Training

Decision Training was developed by Dr Joan Vickers, a sports psychologist, currently professor in the Faculty of Kinesiology, and director of the Neuro-Motor Psychology Laboratory at the University of Calgary. She is the author of the key work on the subject, *Perception, cognition and decision training, the quiet eye in action* (Vickers, 2007). Vickers developed the Decision Training model, a three-step training process, in the mid-1990s. It was originally developed for use in sports contexts and designed to train athletes' cognitive skills at the same time as their motor skills by encouraging them to take an active part in the learning process. It is based on a body of research that points to the importance of cognitive engagement in learning physical skills. This body of research suggests that unless a student is cognitively engaged and therefore intrinsically motivated to learn, learning will plateau at some point. High levels of cognitive engagement and intrinsic motivation are key components of selfregulated learning behaviour, which, Vickers suggests, can be developed through the use of Decision Training (Vickers, 2007). Decision Training takes its name from the idea of decision making. The central idea is to prompt and develop the student's decision-making abilities in the practice and performance of motor skills through the development of cognitive abilities.

The pedagogy of Decision Training, the practice of applying the model, uses a series of teaching tools or strategies that focus on practice design, feedback delivery and instruction. In contrast to the direct linear training of skills involved in behaviourist training, Decision Training uses non-repetitive, "variable practice" and "random practice" training design to replicate the complexity of real-world conditions experienced in performance (competition) environments.

In the areas of feedback delivery, specific feedback strategies are used to motivate students to self-assess, self-correct and seek out their own solutions to problems. The students are encouraged to reflect on, and discuss, their learning proactively with their teachers, thus creating a training environment where students have agency in the actual process of learning:

- Instructional strategies, which include "the use of hard-first rather than easy-first instruction, the extensive use of modelling, and instruction where an external rather than internal focus of instruction is emphasized" (Vickers, 2007, p. 213), are also used to keep students cognitively engaged with the training process.
- These particular teaching strategies are used in combination with specific practices or exercises, which Vickers refers to as "cognitive triggers", to develop an identified cognitive skill involved in a specific "decision" to be trained in the student (Vickers, 2007, p. 170). For example, a circus artist may not be looking in the right direction at the right time in the execution of a technical element of a physical skill. With Decision Training, the solution is not to keep repetitively drilling the physical elements so the student soon becomes mentally disengaged with the exercise, but instead to look at what cognitive decisions the student needs to make to correct this problem. In this way the teacher can, by using a Decision Training plan with specific practice design, feedback and instruction strategies, train the student to become effective at correcting the problem by themselves by learning how to identify, then attend to the right visual cue and respond with the right motor action. Decision Training skills.

1.5 Overview of Research Process

The research process involved the introduction of a series of Decision Training teaching interventions into teaching and learning situations. The effects of these interventions on teachers' practice and on the learning behaviour of the students was observed *in situ* in the training studio, and investigated through interviews (with both teachers and students) and through focus group meetings (teachers only).

This approach used three action research cycles of observation, reflection and action. Within each of these action research cycles, specific strategies were implemented following the three-step Decision Training model: the first step was identifying a specific cognitive weakness that needs to be addressed in the student; the second step was choosing a cognitive trigger or exercise to prompt the cognitive skill being developed; and the third step was selecting one, or a combination, of Decision Training teaching tools or strategies to engage the student in the learning process (Vickers, 2007, p. 166-169).

Three action research cycles of four to five weeks duration were conducted. In the first research cycle, the aim was to allow the teachers to become accustomed to working with the Decision Training teaching tools and strategies, and for the students to become accustomed to a different type of learning environment. The second action research cycle involved reflecting on the student's training problem (i.e. their cognitive weakness) in focus group meetings with the teachers, then devising a Decision Training plan using the three-step model, which was then implemented in the studio. The third action research cycle involved reflecting on the results of the second action research cycle, and developing and implementing the training plan for the final research period.

Interviews, focus group meetings and observation of training sessions and performance outcomes were used to collect data, which were then analysed. Research outcomes, drawing together the experiences of teachers and students in each case study, were teased out from the data to produce research findings and recommendations.

1.6 Background

1.6.1 Influences informing the author's interest in cognitive training.

Before moving to a more detailed breakdown of pedagogy and training at the NCS, my training, performing and teaching background will be discussed. I will review the formative influences in my training, performing and teaching background to give a context to my interest in cognitive approaches to teaching, such as Decision Training.



Figure 1. The author, Jon Burtt, during fieldwork at the National Circus School, Montreal

My practice has evolved as a result of a combination of diverse influences and experiences. I have had a diverse physical training background beginning with my training as a dancer but moving into other movement forms such as martial arts, physical theatre and circus through the course of my career. I initially studied dance in the full-time, three-year professional course at the London Contemporary Dance School in the mid-1980s. At the school, my contemporary dance teacher was Viola Farber.

A key influence on Farber was the contemporary dance pioneer, Merce Cunningham, in whose company Farber had worked as a founder member in the period when he was developing his own ground-breaking choreographic practice. Cunningham fundamentally changed contemporary dance in his approach to the moving body in time and space, with his notion of chance happenings, and of music and sound as variables independent of the movement. He also revolutionised the way in which choreographers and dancers worked together, allowing dancers to use chance happenings to structure the sequencing of the movement material in dance pieces as they were being performed. This work was characterised by "the democratisation of both the stage space and the kinesphere of the body; the layering of movement phrases and tempi and the resultant, constantly changing flux of movement through time and in space" (Carter, 1998, p. 20).

Farber, who was also an accomplished musician, was very influential in my development as a dancer and teacher. As a teacher, she challenged her students to be highly cognitively engaged, instructing our attention to external points of reference such

as the effects of our actions on the environment, and on other bodies in space. Embedded within dance classes delivered using this rigorous contemporary technique were complex task-based exercises that were based on structured improvisation. In these classes I was cognitively challenged all the time. For instance, we were required to make on-the-spot decisions about when to move, and the quality and the duration of movement, while performing complex technical exercises that were juxtaposed with live improvised musical scores or silence. Sometimes Farber would instruct the accompanist to improvise random pauses in the score, and sometimes the music or sound would function independently from the movement. With her own company she was known for the way she collaborated with the dancers, and for the use of indeterminacy in the structure of her works. In an interview with Peggy Spina in 1977, Farber recounts her choreographic approach which was mirrored in her teaching practice:

I think change is certainly a very basic ingredient. Yes I give movement material and then in sections of dances the dancers have a choice of how they will use that. For instance there are partnering sections and during the performance the dancers can decide with whom they will do what. (Farber, 1977)

After my time at the London Contemporary Dance School, I went on to work as a performer, choreographer, director, teacher and researcher in the UK, Australia, Asia and Canada. During this period another formative influence was the dance educator and choreographer, Nannette Hassall, now head of dance at the WAAPA, who had also worked with Cunningham in the early 1970s, and with whom I worked as a dancer in the Melbourne-based dance company, Dance Works. Hassall's emphasis was on taskdevised work, collaborating with the dancers to create the movement material. An example of her approach was the creation of her work Faster than photos (1989). The choreographic process was like a form of applied mathematics in which the building of the dance material involved accumulating small fragments of phrases that each dancer had devised, which were rewound and then danced as if they were being played on fast forward. Through an accumulation process the next dancer's movement would be absorbed into the phrase, and so on. This type of creative process required dancers to work with a heightened state of mental engagement in the creation and performance of her dance pieces; in effect, in this formative period, I was being introduced to a form of cognitive learning through collaborative decision making and cognitive effort.

These influences from Viola Farber and Nannette Hassall, both of whom trace their lineages back to Merce Cunningham, and the rise of post-modern dance, have affected my own teaching and creative practice. After working as a dancer and rehearsal director with several Australian contemporary dance companies, I went on to focus on my own work, becoming increasingly interested in aerial dance, which attracted me because of its extra-dimensional spatial and choreographic possibilities. I started collaborating with other art forms and co-created Skadada, one of the first hybrid performing arts groups in Australia. The work, which was the result of my collaboration with visual artist Katie Lavers and sound artist John Patterson, explored interactive performance systems using movement sensors in lighting, props and costumes to trigger sound and image; digital sound and video; live, recorded and digitally manipulated vocals; and spoken text and movement. My work with Skadada developed into an interest in aerial dance and then led to the expansion of Skadada into a multi-artform circus company combining physical theatre, puppetry, dance, interactive systems, digitally manipulated sound and video, and circus arts.

Attached to the company was a training program that I founded and developed to teach circus arts and dance to young people. I applied a model that focused on the use of variable training design including multidisciplinary learning through physical practice, which included hatha yoga, classical ballet, contemporary dance, martial arts and multiple circus disciplines. I worked to develop the self-regulatory, collaborative and problem-solving skills of the trainees. Without being consciously aware of research taking place in sports science at that time, I would suggest that I was "intuitively" using teaching strategies being proven by sports psychologists such as Joan Vickers (2007) and others (Magill, 2007; Schmidt and Lee, 2005) to improve long-term learning outcomes. The teaching strategies I was intuitively using included variability in training design; different feedback strategies including self, group and video feedback; modelling; problem solving through task-based practices that had performance contexts; and the training of creative skills in tandem with technical learning.

Because I was not originally from a circus training background, I collaborated with people who had circus or gymnastics training and then, after absorbing the basic principles of a number of different apparatus, I began to work out ways in which I could bring my dance and dance-related teaching, and choreographic skills, to bear in the circus domain. I combined this "intuitive" teaching practice with class content derived from my training, performing and teaching experience. These included:

- the task-based collaborative modes of teaching from my post-modern contemporary dance training background
- an interdisciplinary approach using yoga, somatic alignment techniques, martial arts, contemporary dance and classical ballet techniques
- training design, feedback delivery and instruction strategies that, in hindsight, mirrored some of the strategies used in Vickers' Decision Training model.
 My teaching style with my performing company and training school was

unusual in the context of the dominant modes of teaching in the circus arts, such as using a direct linear teaching style, a narrow range of discipline training, and vertical power relations between teacher and student. Features of the training program I devised for my circus arts school and company included multidisciplinary training, non-linear practice schedules, task-based problem solving including the creation of self-devised acts, working with video, and some self-management of training. I was instinctively using in my classes particular teaching strategies, in the areas of practice design, feedback and collaborative learning, which exist as teaching strategies in Decision Training.

With respect to practice design, I was in the habit of mixing up the structure of classes so students did not become complacent and regimented. My feedback strategies, a crucial aspect of Decision Training, included the use of "questioning" techniques to develop decision-making and problem-solving abilities, and "video feedback" to help students analyse their own movement and the movement of others. I also encouraged students to be cognitively engaged in the learning process by teaching in a collaborative way so that, as the student became more proficient, they would take on more responsibility for their own learning. This was a much more horizontal form of power relations between teacher and student than is present in the dominant traditional mode of teaching circus. I asked students what they wanted to do, and what they wanted to learn. I often changed the class structure if students were not responding, thinking of different ways of teaching the same physical or creative skill, so that if one approach failed, another might be successful. In my "intuitive" approach, in addition to "variable practice" design, I used forms of high frequency "questioning", "video feedback", "modelling", "hard first" instruction and "external focus of instruction" without being formally aware that they were all Decision Training teaching strategies.

In my teaching practice, my goal was to create a stimulating and collaborative learning environment in my classes. I saw, and in my current teaching practice still see, my role as that of a "facilitator" where students learn *with* rather than *from* me, thereby developing life-long learning tools that will enable them to develop their own creative practices and thrive in the world outside the training studio.

Looking back on my teaching style before this research project, I was, without being fully aware of it at the time, trying to create learning environments that were focused on self-regulation and intrinsic motivation, and find ways to get students to engage with and actively contribute to the learning process.

Educational psychologist Barry Zimmerman describes the term "self-regulation" as consisting of:

processes whereby learners personally activate and sustain cognitions, affects, and behaviours that are systematically oriented toward the attainment of personal goals. By setting personal goals, learners create self-oriented feedback loops through which they can monitor their effectiveness and adapt their functioning. Because self-regulated persons must be proactive in order to set goals and engage in a self-regulatory cycle, supportive motivational beliefs are also essential. Contrary to conventional wisdom, self-regulation is not defined as an individualized form of learning because it also includes self-initiated forms of social learning, such as seeking help from peers, coaches, and teachers. (2011, p. 1)

As I began this study I was unaware of the theoretical underpinning of learning theories in education and physical training, such as the pedagogical movements of the mid to late twentieth century, which had led to the development of new cognitive approaches to education, and the theories of motor learning and control emerging from sports psychology that were being developed at the same time. Before undertaking this research I, like many dance and circus arts teachers, taught from my embodied experience—a combination of embodied knowledge gleaned from my prior physical training experience and my creative practice experience. In that sense, I was teaching what I intuitively felt students needed to know to thrive, either as professional dancers and circus artists or—at a social arts level—to take what they learnt in the classes, such as mastering physical challenges and building trust and self-esteem, and apply these skills in their daily lives. Wanting to know more about teaching practices in a more formal and analytical way inspired me to explore learning and teaching as a subject matter for this doctoral research.

1.6.2 Montreal and the National Circus School.

Montreal has rapidly become the main centre for circus arts in North America, and is one of the major circus centres in the world. Circus in Montreal and in Quebec generally has grown exponentially in the last 30 years. This has been in large part due to the success of *Cirque du Soleil*, now the largest performing arts company in the world. *Cirque du Soleil* emerged in the early 1980s at about the same time the NCS was being set up (Leslie & Rantisi, 2011). This is more than half a century after the first formally recognised circus school in Eastern Europe, the Moscow Circus School, which was formed in 1927 (Burgess, 1974, p. 68). The Moscow school came directly out of the Russian gymnastics program. Circus scholar Duncan Wall wrote about the link between this Russian gymnastic-influenced model and the founder of the NCS, Guy Caron: "In 1981, Guy Caron, a Canadian graduate of the Budapest Circus School, teamed up with gymnast Pierre Leclerc to establish the *École Nationale de Cirque* in Montreal, based on the Russian model, which Caron investigated in Hungary" (Wall, 2013, p. 34). This East European model was notable for its prevalence of one-to-one and small group teaching (Albrecht, 1995).

The NCS's rise to becoming one of the world's most successful circus arts training institutions is closely linked not only to the phenomenal success of *Cirque du Soleil*, but also to the emergence of *Cirque Éloize* (1993) and the 7 Fingers (2005)— both rapidly expanding, highly successful companies founded by NCS graduates after stints of working as performers with *Cirque du Soleil*. These newer companies locate their difference to *Cirque du Soleil* by the increasing use of the ensemble style format, and the representation of performers in "everyday" costumes, in contrast to the exoticism of costuming in *Cirque* shows. In a 2014 interview with the *Boston Globe*, Samuel Tetreault, a co-founder of the 7 Fingers, alluding to this new direction of small to mid-sized circus companies in Montreal, said, "We cater to the intellect. We want to be real people on stage—real people who can do extraordinary things. We are normal people with normal problems that we can transcend. Audiences can relate to us" (as cited in Harris, 2014). The nexus between the NCS and the circus environment of Montreal suggested a fertile ground for a localised research project.

In 2003, the NCS moved to its present state-of-the-art building directly across the road from *Cirque du Soleil*'s international training headquarters. Its annual shows are performed in a purpose-built circus venue, La Tohu, around 200 metres away. These performances, which to differing degrees involve all the students at the school, serve as showcases for graduating circus artists. From its beginnings in 1981, the school has now expanded to a current student cohort of 150 students in the high school and tertiary programs who come from over 20 countries to train in world-class facilities with the expert teaching pool of over 100 (NCS, 2015). Every available bit of space is utilised inside the purpose-built facility. A fourth fully equipped training hall has been added to the existing building in recent years, and a new wing to provide accommodation for first year foreign students was built in 2012. Being situated directly across the road from *Cirque du Soleil* means that the school shares world-class trainers with the mega-circus company and also attracts some of the most gifted students.

In circus arts the traditional notion of competition as represented in sports is not as overt but at the school I would also argue that it is clearly present. Being an elite institution students are highly competitive, there are presentations which could be argued to have a subliminal competitive element, and students' physical achievements are recorded and compared. There are also external circus and other performing arts competitions in which students present their acts. Success in these competitions reinforces the international reputation of the school.

At the 36th *Festival Mondial du Cirque de Demain* in 2015, the NCS graduates were the dominant force in the medals tally, with a gold medal awarded to contact juggler Jimmy Gonzalez (2013 graduate), a silver for the porter Mark Pieklo and flyer Laura Smith (both 1999 graduates and members of the Lift Collective), and a bronze medal for the Cyr wheel duo of Francis Perreault (2013 graduate) and Lea Toran Jenner (2014 graduate). Additionally, major prizes were awarded to NCS graduates including the prestigious Victor Kee Prize to Jimmy Gonzalez and the Annie Fratellini Prize, awarded to François Bouvier (2013 graduate) for his performance on tight wire (NCS, 2015).

Currently, the school is graduating the largest number of final year students of any circus school according to ex-NCS director Marc Lalonde. In a 2012 interview, Lalonde reported that there was currently a shortage of professionally trained circus graduates worldwide, with all 24 of the previous year's school graduates securing professional work (Woods, 2012). In 2013, 30 NCS graduates were working with *Cirque du Soleil*, spread across 12 different shows. Twenty other former NCS students were performing in the 7 Fingers' shows at that time. In 2014, the school graduated 31 students from nine different countries. There is little doubt that the NCS is producing highly regarded elite-level circus artists as evidenced by the impressive graduate employment figures and the *Festival Mondial du Cirque de Demain* competition results. In an interview with the *Montreal Gazette*, Howard Richard, the NCS director of creation, said of the high employment rate of NCS graduates in an expanding market, "At least 95 per cent of the students, when they graduate, know where they are going [...] Circus is growing" (cited in Donnelly, 2014).

The NCS has pioneered the introduction of a wide range of complementary disciplines into the curriculum including dance, music and theatre. The students participate in regular creation periods, and have a variety of regular performance opportunities, as well as access to some of the world's most respected circus trainers, teachers of complementary disciplines and artistic advisors. Some of these teachers work not only at the NCS, but also at *Cirque du Soleil* directly across the road from the NCS, and some also work in their own private studios teaching some of the world's top performers who travel from overseas to train specifically with them. The school's graduates are generally regarded as well-rounded, elite-level performers who are regularly picked for shows with the major circus companies around the world, and in the local context, with the 'big three' companies in Montreal—*Cirque du Soleil*, the 7 Fingers and *Cirque Éloize*.

Despite these successes, it is also clear that the circus arts industry is rapidly changing with a diversification of performance contexts, which have moved away from large traditional circus shows to smaller ensemble performance projects; increasingly there is a blurring of boundaries between what constitutes circus, dance and physical theatre. In light of this and the school's interest in researching ways to align graduate outcomes with industry needs, questions emerge such as what are the optimal graduate capabilities required by employers in the circus arts industry? And which current circus arts pedagogies are facilitating the development of these optimal attributes?

Two major reports were commissioned in 2008 and 2009 by FEDEC (Fédération Européenne des Écoles de Cirque Professionnelles), a federation of 41 European and international professional circus schools. The reports, reflecting the diversification of professional practice taking place in the circus arts industry, document the shifts that have taken place in circus training, and in the career objectives of students. These shifts range from changes in the type of training taking place in circus arts institutions—a narrowing of the disciplines taught, and a shift from traditional large-scale group acts to
more solo and duo acts, which serves to accommodate the needs of the numbers of smaller circus companies that have emerged—to the career objectives of graduates (from traditional circus companies to contemporary companies and small ensembles) (Jacob, 2008; Herman 2009).

The FEDEC reports overview the types of training and graduate capabilities, as well as the key graduate attributes identified by a range of employers. These responses produced a number of questions concerning the nature of skills required by a student to develop into a successful multidisciplinary contemporary circus artist, and what teaching strategies can create the most effective learning environments in which students can develop these skills.

Results of interviews with circus employers who were asked to identify "ideal" attributes for circus arts graduates show that these "ideal" capabilities were identified as developed cognitive abilities, such as having a high level of self-regulation and highly developed decision-making skills. Also identified as being attributes sought after by employers were developed creative and collaborative skills (Jacob, 2008; Herman, 2009).

One key area of interest that emerged from these reports was the focus on selfregulation as a foundational life-long skill that is particularly important for effective long-term learning, and increasingly of relevance in relation to the management of a successful professional career in the diverse domain of contemporary circus (Jacob, 2008; Herman, 2009). Self-regulation, or self-regulated learning in which students are cognitively active in their own learning processes, has long been argued by educational researchers as being a crucial ingredient for transformative learning. Salmerón-pérez et al. (2010) argue that self-regulated learners learn "through experience" and from this "they construct meaning, objectives, self-efficacy, beliefs, and learning strategies" (p. 2). Albert Bandura (1977) "situated the construct" of self-efficacy "within a social cognitive theory of human behavior" (Pajares, 1997, p. 1) that describes how:

individuals possess a self system that enables them to exercise a measure of control over their thoughts, feelings, motivation, and actions. This self system provides reference mechanisms and a set of subfunctions for perceiving, regulating, and evaluating behavior, which results from the interplay between the system and environmental sources of influence. As such, it serves a selfregulatory function by providing individuals with the capability to influence their own cognitive processes and actions and thus alter their environments. (Pajares, 1997, p. 1)

Returning to the local context of the NCS research project and the "ideal attributes" of graduating circus artists as documented by the FEDEC reports, the NCS's website describes the school's version of the ideal contemporary circus artist in terms of the skills graduates need in today's circus arts industry, i.e. to be "both creators and performers" (NCS, 2015):

Since circus artists today are called upon to be both creators and performers, creativity and artistic exploration must form the core of their education. For this reason instruction is based on a multidisciplinary approach to the circus arts, integrating other performing arts such as dance, acting and music. A low student/teacher ratio ensures that each student receives personalized attention and encouragement throughout their training. (NCS, 2015)

The NCS, by stressing the need for the circus artists training at the school to be able to develop their own creative practices, are, in effect, advocating the need for pedagogies that encourage self-regulatory learning behaviour. Therefore it would appear that a cognitivist approach like Decision Training, which aims to develop the selfregulation of students, addresses perceived needs in the school and of the circus industry itself, as outlined by the FEDEC reports.

1.6.3 Current circus training and performance at the National Circus School.

There are two main areas of focus in current circus arts training at the NCS. The first of focus is body conditioning. Body conditioning consists of activities focused on targeting the development of the required agility, strength, flexibility, speed, endurance and proprioception for specific circus disciplines. Therefore, time both in and outside of class is devoted to body conditioning to develop the physical prerequisites required for the student's specific circus discipline. Body conditioning is usually implemented to a greater degree in the early stages of a student's training but tapers off when they are approaching a performance period. This follows a sports training technique known as periodisation, which plans for peaks in performance recovery periods over the course of a training year (Bompa, 1994).

The second area of focus is discipline-specific technical and artistic training. In the NCS, a large amount of face-to-face class time is spent on the technical and artistic

skills necessary for the creation of a circus "act", focusing on the development and acquisition of a movement vocabulary upon which the student can draw; the composition of sequences that comprise their act; and the artistic and technical elements of the act. The student will also be exposed to a variety of complementary classes, such as classical ballet *barre*, contemporary dance, clowning, acting, and music lessons to provide other artistic and technical skills that can be applied to their circus act.

Each student's circus act is constructed in class. The student, depending on the extent of their foundational movement vocabulary in their chosen primary discipline, will work to explore variations of existing movement sequences or technical skills, and will also explore new possibilities, sometimes inventing new skills in the process. The students are encouraged to take a central role in the composition of their acts, which change over the three years that the student trains at the school, and their training eventually culminates in their graduation piece, which is shown in the annual school show at the circus venue La Tohu. In effect, this process of having the student create their own act (collaborating closely with their primary technical trainers and artistic teachers) requires exactly the kind of self-regulatory skills that cognitive pedagogical approaches such as Decision Training aim to develop.

Throughout the year at the NCS, a number of performance opportunities exist for students to test out their compositions on an audience and receive feedback from other trainers and teachers, and their peers. These include regular performance showings—which function as examinations—in each semester in front of the entire school; a group project on which they work collaboratively with other students to develop a performance work; and the annual graduate show. The whole act or a modified version of the act will be presented as part of the annual show performed at La Tohu. The annual show is created by an experienced invited director, and is structured around a hierarchy of performers: third year graduating students in the main roles showcasing their artistic and technical skills in their specific disciplines, second year students in supporting roles framing the performance-for example, performing "crowd" movement sequences—and first year students performing a group work in the foyer prior to the main show. Graduating students also perform their signature act in what is called the *épreuve synthèse*, their final examination where they are judged by a professional jury in front of an audience of circus industry representatives, directors and talent scouts.

1.6.4 Learning and teaching and diversity of practice in the circus arts.

A circus arts graduate coming out of an elite training program such as the NCS has an unusually broad range of practice, compared to other performing arts graduates, having expertise not only in their speciality discipline, but usually also in complementary disciplines such as general acrobatics or a combination of specific disciplines.

These combinations can be as varied as a student training in unicyling and *corde-lisse* (rope), or hand-to-hand (ground-based partnering) and duo trapeze (a duo act on one trapeze with partnering), or juggling and Russian bar basing (the base position in a Russian bar act).

There are many possible combinations with new apparatus and disciplines being added all the time. Some students invent new disciplines, or invent new variations of disciplines thereby expanding the diversity.

In addition, the circus arts performer graduating from an elite school such as the NCS will have a base in dance, acting, singing, clowning and creative practice. This multidisciplinary aspect of the training is why circus arts students are highly adaptable, highly employable and appear in a diversity of performance contexts from dance-based works to physical theatre, and from main stage theatre to opera, experimental theatre, performance art or musical theatre.

By comparison, a graduate from an elite dance program would not be expected to have such a wide range of practice. Having worked as a teacher across both dance and circus arts, I would argue that students and teachers in the circus arts come from a far wider range of backgrounds and practices than in dance, where technical teachers are inevitably specialists—either ex-professional dancers or practising dancers.

Because of this diversity of practice taking place in circus arts schools, teachers often teach several different disciplines, often including a discipline in which they have not specifically trained or performed. An example of this can be seen in Case Study 1, where the teacher was not a high-level juggler, and did not have performing experience in the discipline. This teacher also currently teaches several other disciplines in the main program such as acrobatics and hand-to-hand on unicycle, and is working on research projects in acrobatic techniques at the school. This is not an unusual situation as the diversity of practice at the school, and the increasing numbers of students training there, requires most of the technical teachers to be able to teach in a number of different disciplines.

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There are currently 47 technical teachers teaching 44 separate disciplines or discipline variations in the school's main program for a student cohort of around 80 students (NCS, Staff Teaching, 2015). If artistic advisors and other teaching staff are included the teaching pool is up near 80 teachers.

The ratio of one multidisciplinary technical teacher to two students at the NCS is very different to the situation found in an elite dance conservatory where a specialist teacher would more than likely teach one discipline such as ballet, contemporary or modern dance with a much larger number of students per teacher. For example, an equivalent dance school, such as the Juilliard Dance Division in New York has 16 technical teachers teaching around seven separate dance or related disciplines for a student cohort of nearly 100—a ratio of one technical teacher to six students (Dance Division Julliard, 2015).

1.6.5 Current research practice at the National Circus School.

It was through Patrice Aubertin's interest in circus research that this project was able to take place at the school in November 2011. Since that time, the culture of research at the school has continued to gain momentum. In 2012, Aubertin was appointed the Social Sciences and Humanities Research Council of Canada Industrial Research Chair for Colleges in Circus Arts, and research at the NCS has been expanding with the creation of the NCS Research Centre under his direction.

Research areas under investigation at the school include, "Technological innovation through the development of equipment, costumes, accessories, and scenery specific to circus disciplines", "Circus arts teaching", "The writing and dramaturgy of the circus arts", "Adaptation and application of new interactive and immersive technologies to the circus arts", "Health and safety in the practice of circus arts" and "History and aesthetics of the circus arts" (NCS, 2015). Along with ECU, as the first international co-partner with the NCS in this research project, other partners in these research initiatives at the school include Montreal-based circus companies *Cirque du Soleil, Cirque Éloize* and the 7 Fingers; and the Department of Kinesiology, University of Montreal, Geodezik (NSC, 2015).

An example of a research project nearing completion at the school is "Optimizing circus training at the National Circus School of Montreal", a project that has been studying "the nuances of physical preparation, management, and circusspecific teaching methods in a high-level context" (NSC, 2015). The research partner is the Department of Kinesiology at the University of Montreal, and the objectives of the project are "evaluating best practices in teaching interventions in the training of circus artists; developing training design optimization protocols that help to improve student performance; and performing an epidemiological study of injuries sustained by students to help injury prevention" (Aubertin, cited in LaSalle, 2013 [author's translation]).

Other NCS Research Centre projects that involve circus arts pedagogy include, "The development of specialized resources in English for circus arts teaching in a digital learning environment", which has resulted in an English language webinar training program called "Instructor E-Learning", which was launched in 2015; a Canada-wide project, the "Impact of the introduction of the practice of circus arts on the development of physical literacy of children of the 4th and 5th grade" with research partners *Cirque du Soleil* and the University of Manitoba, and a project evaluating physiological loads on artists during training and performance with research partners *Cirque du Soleil*, University of Montreal and the University of Manitoba (NSC, 2015).

An example of recent non-quantitative research literature emerging from the National Circus School's research centre is, 'The making of expert performers at Cirque du Soleil and the National Circus School: A performance enhancement outlook' (Filhoa E., Aubertin, P., & Petiot, B. (2016)) in the *Journal of Sport Psychology in Action,* which explores 'the psychological processes and skills necessary for performance artists to excel in contemporary circus' (n.p.). Another important source of recent scholarship in relation to research in the context of the NCS is the Montreal Working Group for Circus Research based at Concordia University. A recent overview of current circus research coming out of the Working Group and its relationship with the National Circus School is covered by Louis Patrick Leroux in 'Contemporary circus research in Québec: building and negotiating an emerging interdisciplinary field' (Leroux, 2016).

The challenge now is to determine in what ways new teaching approaches, information and research such as the current study can be effectively transferred into general teaching practice at the NCS to stimulate the emerging culture of discourse about circus arts pedagogy where research feeds into practice and *vice versa*. This research project adds to this new culture of critical discourse.

1.7 How this Research will add to the Body of Knowledge in the Field

There is an abundance of evidence for the benefits of training models that encourage cognitive engagement in terms of the development of motivation, selfregulation, self-efficacy and other cognitive skills. This evidence consists of a large body of research in education and sports (see Chapter 2 and Chapter 4). However, there is a much smaller body of equivalent research on contemporary circus arts teaching practice at the higher education level.

Specifically, Decision Training has been tested and implemented in sports contexts, for example with sports teams, but has, to my knowledge, only once before been applied in a circus arts context. This was when the use of one Decision Training tool, "hard first" instruction, was successfully applied at Cirque du Soleil in 2000, and has since become a permanent training strategy in their circus artists training program. The "hard first" strategy, to be discussed in detail later in this thesis, allows for the introduction of periods of more advanced practice early in the training schedule, even before the athlete is completely ready to perform those skills. In the case of Cirque du Soleil's artists training program, the training of artistic elements and skills, usually left until a stage later in the training of new artists, was brought forward into an earlier part of the artist's training. This was a radical change for the trainers who previously had always started with technical development; only later were the artistic trainers brought in to work on actual performance elements such as aesthetic presentation, character acting, narrative context, and performing with lighting and costuming. "Hard first" instruction proved a successful innovation, and it was immediately adopted by Cirque du Soleil and used in the circus artists training program. This adoption of "hard first" instruction has also meant that the training period has become more efficient, allowing *Cirque du Soleil* to reduce the time spent training and preparing their incoming artists for shows from six to four months (Vickers 2007, p. 225).

However, to my knowledge, this PhD research project is the first formal research involving the full Decision Training model within a circus arts school, so it will add an important new body of knowledge to the field by providing unique research findings that then have the potential to be applied in the main training program at the NCS.

This research not only addresses gaps in the current body of knowledge in the area of cognitive approaches with respect to circus training (excluding the use of "hard first" instruction at *Cirque du Soleil*) but, through this research I also add to the body of knowledge in relation to the influence of learning and teaching styles on the use of Decision Training, which I discuss later in this thesis as one of the key themes of the research findings.

1.8 Stakeholders who will Potentially Benefit from the Research

A large number of stakeholders will potentially benefit from this research. This includes teachers and students of circus arts, the circus arts industry, and the partnering research institutions.

Teachers of circus arts

Teachers of circus arts may benefit from this research because it has the potential to introduce a new body of knowledge that can inform teaching practices in the circus industry, both within the NCS and beyond. This research has the potential to help teachers within the circus arts re-assess their own teaching practices and absorb new approaches, enabling them to improve their own pedagogical practice. The research will also contribute to the general discourse about teaching practices in the circus arts industry, both within the NCS and beyond.

Students of circus arts

The introduction of cognitive teaching approaches offers the potential for students to learn tools to develop life-long self-regulated learning skills that will better prepare them for life outside the institution, in the complex environment of contemporary circus, in which they will have to rely much more on their own resources.

The circus arts industry

Locally and internationally, the circus arts industry has the potential to benefit from this research because graduates trained in cognitive decision-making skills have the potential to develop highly cognitively engaged practices in training and performance (e.g. high levels of self-regulation, decision making, planning and intrinsic motivation), thus having the skills to actively contribute to the circus arts industry, whether they are making self-devised work, working in a collaborative group, a small to mid-sized company or a large touring show.

Students with these sort of graduate capabilities have the potential to be more able to adapt to the rapidly changing types of creative practice taking place in contemporary circus arts.

Partnering stakeholders

Various research partners involved in this project also have the potential to benefit from this research.

West Australian Academy of Performing Arts, Edith Cowan University

As a research partner in this project, the WAAPA has the potential to benefit from this research in several ways. This project, as the first international research partnership between the WAAPA and the NCS, lays the groundwork for future research possibilities. The project's research outcomes have the potential to inform pedagogical research in other performing arts disciplines represented at the WAAPA, including dance, theatre, music and musical theatre. The project also adds to the international research portfolio of ECU and provides further rationale for future international research projects at the postgraduate and postdoctoral levels.

The National Circus School

The NCS has the potential to benefit from this research because, as the first international research study undertaken at the NCS, it paves the way for further research to be supported by the school. The research has put in place the groundwork for the possible emergence of a culture of critical discourse about teaching, and offers the potential for teachers to become more empowered in terms of being able to provide input to pedagogical improvement in the school. Other benefits from this research are that the NCS can be seen as driving innovative research in circus arts and developing successful international research partnerships, and it lays the groundwork for future research partnership possibilities.

Both the WAAPA and the NCS will have access to the project's research outcomes, adding to the body of knowledge in Canada and Australia in this area.

Association of Private Colleges of Quebec

Another research supporter was the APCQ, which contributed funding in the form of a PREP grant. APCQ also has the potential to benefit from this research in many of the ways described above.

Circus researchers

Circus researchers within the growing field of circus studies have the potential to benefit from this research project because it adds a new body of knowledge to a field in which there has been little formal research up to this point.

1.9 Overview of Methodology

Action research has been chosen as the methodology in response to the research aim to investigate the lived experience of teachers and students. There was also an interest in addressing a specific localised issue with the results having the potential to be useful at the local level, that is, to the community of learners and teachers at the NCS. The project therefore required a qualitative and flexible research methodology in which the research interventions could be modified according to the specific needs of each case study as the project progressed. Action research's cycles of reflection, planning, action, observation—and then reflection before proceeding to new interventions in the next research cycles—suited the needs of the project.

The research project entailed working with both the teachers and students in various ways so different inquiry approaches were employed within the action research methodology. With the teachers, a collaborative approach was used that involved working, meeting with them in interviews and focus groups to discuss and reflect on research interventions (actions), and then working with them to develop new interventions, which were then observed in the training studio. With the students, the process was different: they were not informed about what actions the teachers were going to implement in the studio, and they were interviewed separately and not as a group. The learning behaviour of the students was observed through their responses to the teachers' actions in the studio, and their lived experience was investigated through interviews in which the students were able to reflect on their teachers' actions. Although I took a participatory role to various degrees in some of the research interventions with the teachers, for the most part in the studio these interventions were implemented by the teachers participating in the study. Where there was full participation of myself as a "participatory action researcher" was in the group forums with the teachers where there was open discussion about the effects of interventions and the development of proposals for new interventions.

Action research methodology will be discussed in greater detail in Chapter 3, both in terms of its historical and theoretical context and also in terms of the way action research has been used in this study.

1.10 "Map" of the Thesis





1.11 Overview of Thesis Chapters

Chapter 1. Introduction

The first chapter overviews the scope of this thesis and includes the impetus for the research, the research aim, the research problem and the purpose of the research.

This chapter overviews background, in terms of current teaching and training at the NCS, and my own personal teaching background in relation to my interest in cognitive approaches to teaching. I also outline my arguments as to why there is a need to look at new models to enhance the current training process, and examine how this research addresses gaps in the current body of knowledge in both the areas of cognitive approaches to circus training and the effect of learning and teaching styles on the use of these cognitive approaches.

Chapter 2. Literature Review—Historical and Theoretical Context

The second chapter charts the evolution of the educational, psychological and motor learning, and motor control theories that laid the foundations for cognitive approaches to physical training, such as Decision Training. The final section of the chapter overviews a selection of studies testing Decision Training in different sports contexts.

Chapter 3. The Action Research Methodology

In the third chapter, action research as a methodology, its importance as the mode of inquiry for this thesis, and how it was used in the project at the NCS is discussed.

Chapter 4. Background to Decision Training

The fourth chapter is a detailed breakdown of Vickers' three-step Decision Training model.

Chapter 5. The Research Process

The fifth chapter covers recruitment, ethics, observations, interviews and focus group meetings, the process of the action research cycles, data collection methods and data analysis.

Chapter 6. Case Study Backgrounds and Research Cycle 1

The sixth chapter begins with a review of the different backgrounds to the case studies, and then moves on to detail the first research cycle, in which teachers were asked to explore the use of Decision Training tools from Step 3 of the model.

Chapter 7. Research Cycle 2

The seventh chapter details the second research cycle, in which each teacher was asked to reflect on which cognitive weakness they wanted to focus on with their student, and to formulate a plan to use the full three-step Decision Training model.

Chapter 8. Research Cycle 3

In the eighth chapter, the final research cycle, in which teachers adapted or refined existing plans, or worked on new Decision Training plans, is presented.

Chapter 9. Research Findings and Discussion

In the ninth chapter, the research findings arising from the three research cycles are explored.

Chapter 10. Recommendations and Implications for Future Research

In the final chapter, I discuss my conclusions based on the research findings and put forward recommendations regarding approaches to implementing a cognitive training method such as Decision Training into the elite circus training environment of the NCS. I also discuss potential for future research examining the wider implications of the project.

1.12 Chapter Summary

This chapter has overviewed the background for this research project, discussed the impetus for the project at the NCS, examined the research problem, noted the research aims and outlined the structure of the thesis.

The next chapter is a literature review that explores the historical and theoretical background of the development of cognitive approaches to physical training such as Decision Training. This is done through a discussion of the emergence of cognitive approaches in physical education, and the rise of sports psychology and the study of motor learning and motor control. The final section of Chapter 2 discusses the learning and teaching styles literature that also informed this project.

Chapter 2: Literature Review—The Historical and Theoretical Background of Decision Training

2.1 Chapter Introduction

Decision Training was developed by Dr Joan Vickers, a sports psychologist who is professor in the Faculty of Kinesiology, and director of the Neuro-Motor Psychology Laboratory at the University of Calgary, Alberta, Canada. Vickers sought to bring a multi-theoretical approach to developing a hands-on training model that was able to be used in sports training and performance contexts.

This chapter will investigate the theoretical and historical background of developments in physical education, sports psychology and theories of motor learning and control that laid the foundations for the emergence of new cognitive approaches to physical training, such as Decision Training. Inquiry is focused on the North American context—as this is where Decision Training originates—and will explore developments that took place within early North American physical education; the confluence of forces in the second part of the twentieth century from which emerged the new disciplines of cognitive and sports psychology; and ground-breaking new motor skills research—all of which provided the theoretical foundations of Decision Training. The scientific and practice-based research that underpins Decision Training will then be discussed, leading to a discussion of some of the studies that have tested Decision Training in sports contexts.

This chapter is structured in six sections.

First, "The Origins of the Physical Education Movement"—the European physical education movements of the nineteenth century, to which physical education in North America traces its origins—are discussed. Literature is reviewed that discusses the process of transformation leading to the new physical education movement of the early twentieth century and the rise of new academic specialisations under the umbrella of physical education, including sport psychology, motor learning and motor control.

Second, "The Cognitive Revolution in Psychology: A Reaction to Behaviourism" discusses the 1960s "cognitive revolution" in psychology that began to challenge the behavioural theories of John Watson (1913), Edward Thorndike (1898), Clark Hull (1943) and BF Skinner (1953).

Third, "New Models of Motor Learning and Motor Control" moves on to examine the body of knowledge that emerged out of the cognitive revolution, which was concerned with new ways of thinking about motor learning and control and laid the specific theoretical foundations for Vickers' Decision Training model.

Fourth, "The Scientific Foundations of Decision Training" overviews the specific aspects of cognitive psychology, ecological psychology, dynamic systems, the constraints-led perspective, and gaze control that are the scientific foundations of Decision Training.

In the fifth section, "Studies in Decision Training", selected studies that have tested Decision Training in various sports contexts are examined.

The final section reviews the learning and teaching styles theories that have informed some of my discussions of teachers' and students' learning and teaching practices, behaviours and preferences in this project.

2.2 The Physical Education Movement and the Rise of Sports Psychology

2.2.1 The origins of the physical education movement.

The origins of Decision Training, a sports training model, can be traced to the formal acceptance of physical education as an essential component of a balanced education program, and its resultant integration into academia leading to the development of disciplines such as kinesiology and exercise science. Decision Training, the pioneering work of Vickers that underlies this research project, emerged from combining two new disciplines: sports psychology and motor learning. This section traces the evolution of sports education, its acceptance as an academic discipline, and the resultant emergence of sports psychology and motor learning and the ways in which the ideas emerging through these disciplines inform the central investigation of the thesis.

The European physical education movement of the nineteenth century was based on early gymnastics. Although gymnastics traces its origins to Ancient Greece, the modern form is attributed to the German educator Johann Christoph Friedrich Guts Muths. Guts Muths, often referred to as the "grandfather of gymnastics", published in 1793 *Gymnastik für die jugend* (gymnastics for youth), the first written course book on gymnastics. By 1800, his book had been translated into English and was used widely as a reference for physical education in schools in England. Guts Muths focused on the training of the human body, writing, "So let us exercise our bodies! Without them we would not think; they are the machines on which we weave the threads of our thoughts" (Guts Muths, 1793, p. 252, cited in Pfister, 2009, p. 2052). Pfister continues, "Guts Muths provided the 'material' (i.e. the exercises and games) for the three 'modern' movement systems which emerged simultaneously in the early 19th century: German Turnen, Swedish gymnastics and English sport" (p. 2052).

The German gymnastics/*Turnen* form consisted of "a broad variety of games, exercises and activities" (Pfister, 2011, p. 3) and was part of the German patriotic movement. It began in 1811 and "was imported into North America around the 1830s" (p. 3). Although commentators point out that no importance was attached to setting and breaking records, "Unlike modern sport, [...] *Turnen* did not attach any importance to records and abstract performance" (Pfister, 2009, p. 2053).

Heavily influenced by the Danish gymnastics school run by Franz Nachtegall, who had derived his method from Guts Muths' system, Swedish gymnastics was devised by Per Henrik Ling. Ling's system was outlined in *Gymnastikens allmänna grunder*, "a work begun in 1834 and published posthumously by his students in 1840" (Pfister, 2010, p. 69), which went on to be a major influence on modern gymnastics. This system involved free exercises on the ground, exercises with apparatus, individual exercises and partner exercises: "Ling used a wide range of apparatus ranging from bars, ladders and ropes to the wooden horse. His physical exercise system also included walking, running, swimming, climbing, somersaulting (using the wooden horse) and games" (Pfister, 2010, p. 69). As Kennard (1977) writes, "For much of the nineteenth century, gymnastics was physical education. Physical educators adopted either the Swedish system of gymnastics, the German system, various American innovations, or some combination of them" (p. 836).

After the American Civil War (1861–1865) "muscular Christianity"—exported to the US through the writings of English novelists and social critics, Charles Kingsley and Thomas Hughes (Hughes, 1857; Kingsley, 1857)—became a dominant philosophical movement of the first part of the nineteenth century, making exercise and fitness compatible with the Christian life, and allowing the still-conservative US to move away from the Puritan prohibitions against play and exercise (Siedentop, 2008, p. 26).

Pfister argues that it was English sport, with its focus on competition and record keeping, that "had numerous consequences, including quantification of performance, standardization of apparatus and facilities, bureaucratization, specialization, rationalization and professionalization" (2010, p. 71).

Then in 1879, Dudley Sargent was appointed assistant professor of physical training and director of the Hemenway Gymnasium at Harvard College. It was Hitchcock's and Sargent's emphasis on "scientific approaches" that "provided fundamental direction for the emerging field" (Siedentop, 2008, p. 27). An increasing professionalism of physical education as an academic profession took place at this time:

Before the turn of the century, physical education had become a part of the professionalization movement which swept academia; a national organization, an Academy, and degree programs emerged. (Struna, 1985, p. 153)

The move away from the specialised gymnastic iteration of physical education to a new broader vision incorporated into the wider context of general education, was to become the new physical education of the twentieth century, opening the way for the development of sports psychology and other related academic disciplines to emerge within universities.

2.2.2 The rise of sports psychology.

In the early twentieth century, within university and college faculties, physical educators were coming into contact with the new thinkers in psychology and education. At the teachers college at Columbia University where Thomas Wood was head of the Department of Physical Education, "the great psychologist Thorndike was also on the faculty there, as was John Dewey, America's greatest philosopher–educator" (Siedentop, 2008, p. 38). Dewey is of particular significance as his work laid the foundations for student-centred learning (Weimer, 2002, p. 7), which informs both action research in relation to the research participant, and Decision Training in relation to the learner. These connections between psychologists and educators created fertile ground for the emergence of the new educational hybrids including sports psychology.

In their *Foundations of sport and exercise psychology*, sports psychologists Robert Weinberg and Daniel Gould write that sport psychology in the US was practiced as early as the 1890s, with psychologists such as Norman Triplett using laboratory methods to predict the performance of athletes under particular conditions; for example, investigating why cyclists would often ride faster in groups than by themselves (Weinberg & Gould, 2014, pp. 8-11).

In the 1880s and 1890s, the use of stop-motion photography was applied to the analysis of movement in animals and humans, and this had an enormous influence on the development of the field of biomechanics. This new stop-motion technology made possible the analysis of movement in a way that had not been previously possible. Experiments using stop-motion photography:

[by] the French physiologist Marey (1830–1904) (Braun, 1992) and by the expatriate Englishman Eadweard Muybridge (also, by a curious coincidence, born in 1830 and deceased in 1904) in the US (Hass, 1976) made possible the analysis of the natural motion of people and horses and opened the way to present understanding of the uniqueness of such motion in perception and planning. (Nadel & Piattelli-Palmarini, 2003, pp. 1-2)

By the early twentieth century, science-based physical educators developed fitness testing such as Sargent's *Universal test for strength, speed, and endurance* (1902) and in 1910, and James McCurdy "set up standards for measuring blood pressure and heart rate" (Siedentop, 2008, p. 39). By 1914 "motor reactions, attention, and abilities as they pertain to sport" (Weinberg & Gould, 2014, p. 9) were being formally investigated by sports psychologist Robert Cummins.

Formalised sports psychology laboratories originated in Europe in the early 1920s. German sports psychologist Robert Schulte published *Body and mind in sport* in 1921, and *Aptitude and performance testing in sport* in 1925. By the mid-1920s, Coleman Griffith, "the father of American sport psychology", had set up a laboratory at the University of Illinois. Between 1921 and 1935, Griffith published 25 articles related to sports psychology and, in 1926, he published *Psychology of coaching*; his *Psychology of athletics* followed in 1928.

Advances in film technology also improved the way the moving body could be captured. Ellen Kreighbaum points out that, "it was not until the beginning of very early cinematographic techniques, in the 1920s and 1930s, that serious research in analysis of sport movements began" (Kreighbaum, 1983, p. 194). The analysis of recorded movement has developed to be a major part of physical training today with "video feedback" being one of the three feedback strategies in Decision Training.

Between 1939 and 1965, the academic foundations of sports psychology continued to develop through the work of physical education pioneer, Franklin Henry, who outlined his views on physical education in an article, *Physical education: An academic discipline*, in which he noted that "there is indeed a scholarly body of knowledge that is unique to physical education" (Henry, 1964, p. 28). This article was widely seen as the legitimisation of physical education as an academic discipline:

Henry's call for an academic discipline of physical education can be seen as a logical outcome of the post-1950 reformist movement in education. Physical educators were forced to begin to redefine their field as an academic discipline rather than as an applied, professional enterprise. It was within that political–intellectual climate that programs for human-movement studies, kinesiological studies, human ergonomics, and exercise science developed. (Siedentop, 2008, pp. 52-53)

By the mid-1960s the academic manifestations of physical education—now referred to as kinesiology or exercise and sport science, sport psychology and motor learning—had become distinct areas of study:

Motor learning specialists focused on how people acquire motor skills (not necessarily sport skills) and on conditions of practice, feedback, and timing. In contrast, sport psychologists studied how psychological factors—anxiety, self-esteem, and personality—influence sport and motor skill performance and how participation in sport and physical education influences psychological development (e.g., personality, aggression). (Weinberg & Gould, 2014, p. 10)

It was from the combination of the bodies of knowledge that had developed in these new academic fields of motor learning and sports psychology that Decision Training emerged.

2.3 The Cognitive Revolution in Psychology: A Reaction to Behaviourism

At the same time as the physical education domain produced academic specialisations such as sports psychology, a shift was occurring in psychology with the onset of the "cognitive revolution" (as it has been termed; Miller, 2003, p. 141), which caused a shift away from the dominant behavioural view towards a cognitive view of learning.

The post-war rise in interest in physical education spawned various subdisciplines such as "biomechanics, kinesiology, motor control, motor learning, sport psychology, sport sociology, sport history, and sport philosophy" (Siedentop, 2008, p. 53). This "cognitive revolution" initiated a wave of experimental work that explored cognitive processing in the learning, acquisition, retention and application of motor actions. Decision Training traces its origins from pioneering work conducted by cognitive and sports psychologists at this time, particularly in the fields of motor learning and motor control. At the same time that researchers in the field of education were introducing new pedagogical models challenging the traditional behaviourist modes of learning and teaching, researchers were also conducting research questioning the dominance of traditional behaviourist models of learning and teaching in the areas of motor learning and motor control. The cognitive revolution and the learning theories it subsequently produced went on to inform the development of Decision Training.

To gain insight into the "cognitive revolution" it is important to view it in relation to the theoretical and historical context of behaviourism, which had played such a major role in the development of psychology, education and sport in the US in the first half of the twentieth century (Mills, 1998, p. 1).

One of the key exponents of behaviourism and the dominant force in psychology from the 1920s to the 1950s in America was the psychologist John B Watson. In 1913, Watson published a landmark paper, *Psychology as the behaviourist views it*, in the journal *Psychological Review*, and this was to become the manifesto for the behaviourist movement. In this paper, he made clear the goals and theoretical basis of behaviourism, writing, "Psychology, as the behaviourist views it, is a purely objective experimental branch of natural science" (Watson, 1913, p. 248).

Watson rejected the theories put forward by another key psychologist of his time, Sigmund Freud, who, writing between the 1890s and the 1930s, developed his psychodynamic approach, which focused on qualitative studies of human behaviour, and the notion that all behaviour is motivated by unconscious "drives" (Freud, 1922). Watson, however, rejected Freud's ideas, declaring, "surely we gain nothing by this concept. We can study the visible and tangible effect of suppressions, tangles, conflicting habits and the like without positing a 'subconscious'" (Watson, 1912, p. 916).

Watson described the theoretical goal of behaviourism as "the prediction and control of behavior. Introspection forms no part of its methods, nor is the scientific value of its data dependent upon the readiness with which they lend themselves to interpretation in terms of consciousness" (Watson, 1913, p. 248). The behaviourists transformed concepts that had previously been described in relation to processes of the mind in new ways that adhered to their objective scientific paradigm. The behavioural revolution, as it was widely termed, "transformed experimental psychology in the US. Perception became discrimination, language became verbal behavior, intelligence became what intelligence tests *test*" (Miller, 2003, p. 141).

Watson's behaviourist theories were the result of a combination of two key philosophical traditions: *mechanism*, a fundamental philosophy that emerged in seventeenth century Europe and followed the "doctrine that natural processes are mechanically determined and capable of explanation by the laws of physics and chemistry" (Schultz & Schultz, 2004, p. 27); and *objectivism*, expounded by the German-born US psychologist Max Meyer in his 1911 book *The fundamental laws of human behavior*, in which he posited that reality is objective, and therefore external to the mind. Meyer's "major methodological doctrine [...] was that psychology was to deal only with objective data and only with behavior of social interest" (Mills, 1998, p. 41). It took another 60 years for research in the 1970s, investigating other ways of looking at learning behaviour, to challenge the objectivist ideas laid down by Watson in 1913. Vickers notes that it was from this period, from the 1970s onwards, that motor learning research began to show that "people trained using behavioral methods were unable to retain the new skills and concepts over an extended length of time" (Vickers, 2007, p. 163).

Watson built on and popularised the classical conditioning theory of the Russian psychologist Ivan Pavlov (1928). This classical conditioning theory involved learning via a process of association, whereby a previously neutral stimulus, known as a conditioned stimulus, becomes a modifier of a particular desired behaviour through a process of association with another stimulus, known as an unconditioned stimulus. A famous example of this approach was Watson's and Rayner's "little Albert" experiment. In this experiment conducted by Watson and Rosalie Rayner in 1920, a nine-month old child was exposed to a number of stimuli including a rat, a rabbit, a monkey, a mask and a burning newspaper. The baby boy showed no apparent fear of these stimuli. A stimulus that did upset the child, introduced independently of the other objects, was the sound of banging on a steel pipe with a hammer. When the child was 11 months old, the rat was again introduced, this time accompanied by the sound of the hammer banging on the steel pipe. After repeatedly coupling exposure to the rat and the sound, little Albert would burst into tears at the sight of the rat even without the sound of the hammer (Watson & Rayner, 1920). From experiments such as these, Watson built his conditioning theories based on stimulus-response coupling.

Later, the psychologist and behaviourist BF Skinner (1954) built on Watson's work, as well as on Edward Thorndike's "law of effect" (Thorndike, 1898, p. 820). According to Thorndike's theory—which was based on experiments examining how cats learnt to escape from puzzle boxes—if an association is followed by a positive outcome it will become stronger and if an association is followed by a negative outcome it will become weaker. Behaviourist "punishment or reward" approaches to physical training such as this are still a common form of instruction in gymnastics, and, by association, other disciplines related to gymnastics training, such as circus. As Vickers points out, "Although behaviorism reached its zenith in the 1950s, it still plays a major role in sport teaching and coaching, as well as in many other areas of education and training" (2007, p. 163).

Skinner, through his famous reward experiments with rats, tested *operant conditioning* and introduced the notion of *reinforcement* (1953). He posited that the use of external reinforcement, either positive or negative, can change behaviour if it is given after a specific response. Behaviour that is reinforced will become stronger, and behaviour that is not reinforced will be what is termed *extinguished*. This theory of learning behaviour, which held sway in psychology through to the 1960s, was another example of a behaviourist theory primarily concerned with observable behaviour, disregarding cognitive reasoning and emotions.

Psychologist Clark Hull was a leading figure in behaviourism from the 1940s to the 1960s. His book, *Principles of behavior: An introduction to behavior theory* (1943) was "the first attempt to write an all-embracing psychological theory using the principles of behaviorism" (Mills, 1998, p. 103); preceding by ten years Skinner's attempt to do so: *Science and human behavior* (Skinner, 1953),. Hull's theory on fatigue and recovery processes was an attempt to explain the effects of long practice periods on skill learning. It was, however, later proved "to be an inadequate account of the processes and variables that determine motor learning and performance" (Schmidt & Lee, 1999, p. 9).

However, Hull's work is of importance to the development of cognitive theories of learning such as Decision Training because Richard Schmidt's schema theory of motor learning, which directly informs the Decision Training model, was a critical response to Hull's theories.

By the late 1950s, scepticism about behaviourism was starting to build and in 1959, linguist and cognitive scientist, Noam Chomsky wrote his famous critique of Skinner's *Verbal behavior*, saying:

One would naturally expect that prediction of the behavior of a complex organism (or machine) would require, in addition to information about external

stimulation, knowledge of the internal structure of the organism, the ways in which it processes input information and organizes its own behavior. These characteristics of the organism are in general a complicated product of inborn structure, the genetically determined course of maturation, and past experience. (Chomsky, 1959, p. 26)

By the 1960s, dissatisfaction with the sole emphasis on external observable behaviour in the behaviourist approach combined with improved experimental methods and the advent of computer technology, and the resultant idea of information processing, to bring in the next wave in psychology—a focus on the internal processes of the mind and on the way human beings *process* information. This new direction was called *cognitive psychology*, a term introduced by Ulric Neisser in 1967, and is one of the central theoretical components of Decision Training (Vickers, 2007, p. 162).

It is important to mention here that even during the years of its dominance, criticism of behavioural psychology had come from within psychology itself. For example, Gestalt psychologists in Germany, some of whom fled Nazi Germany and moved to the US, challenged the reductionist approach of behaviourism and its lack of interest in the role of consciousness in human behaviour. Gestalt psychology was influenced by phenomenology, "a doctrine based on an unbiased description of immediate experience just as it occurs. The experience is not analyzed or reduced to elements or otherwise artificially abstracted" (Schultz, 2004, p. 361).

One of the thinkers emerging from the Gestalt school of psychology was Kurt Lewin, often referred to as the originator of the field of social psychology. He had an enormous influence on social and child psychology through his work on field theory and motivation. Lewin proposed a basic state of balance or equilibrium between the person and the environment. Any disturbance of this equilibrium leads to tension, which in turn leads to some action in an effort to relieve the tension and restore the balance. Thus, to explain human motivation, Lewin believed that behaviour involves a cycle of tension-states or need-states followed by activity and relief (Schultz, 2004, p. 385). Lewin developed the concept of "action research" as a methodology for social research (Lewin, 1948, 1951). It is action research that has been used as the guiding methodology in this thesis, and it will be discussed in more detail in Chapter 3.

Cognitive scientist George A Miller notes that by the early 1950s, many key psychologists, influenced by thinkers such as Chomsky and cognitive psychologist Jerry Bruner, had stopped calling themselves behaviourists. Miller therefore dates "the cognitive revolution in psychology to those years in the early 1950s" (Miller, 2003, p. 141).

At the same time, post-war educational reforms challenged the "instructionist" or behavioural model of education, where the mind of the learner is considered a *tabula rasa*, an "empty vessel to be filled" with knowledge, with the teacher initiating the transmission of knowledge to a passive pupil. In the instructionist model, knowledge is defined as "a collection of facts about the world and procedures for how to solve problems" with the goal being "to get the facts and procedures into the head of the student" (Sawyer, 2008, p. 2), starting from the simpler facts and procedures, and building to more complex ones in pre-determined sequences. Vickers challenges this form of direct linear learning in her Decision Training model by introducing "variable practice" and "random" practice (Vickers, 2007, p. 167).

In his *Pedagogy of the oppressed* (Freire, 1970, 1993), educator and philosopher Paulo Freire famously described this traditional instructionist pedagogy as a "banking model", in which education becomes an act of "depositing" content into the minds of passive pupils within a mechanised narrative structure—the teacher expounding and the student listening. A direct parallel with Freire's description of this traditional "banking model" of learning can be seen in traditional behaviourist physical training still employed in gymnastics and circus training, which, in a similar way, could be said to perceive the body as a *tabula rasa* or an "empty vessel to be filled" with physical knowledge. Freire argued for a new pedagogy where the learner co-creates knowledge with the teacher:

From the outset, [the educator's] efforts must coincide with those of the students to engage in critical thinking and the quest for mutual humanization. His [sic] efforts must be imbued with a profound trust in people and their creative power. To achieve this, they must be partners of the students in their relations with them. (1970, 1993, p. 73)

2.4 New Models of Motor Learning and Motor Control

It is important to look at the emergence of new theories of motor learning and motor control as these directly inform the training tools developed by Vickers, which are a vital part of Decision Training. Motor learning and motor control research investigates how humans learn and control movement. Vickers defines "motor learning" as the "phases, stages, steps, or transitions" people go through to become "proficient" in a motor skill (Vickers, 2007, p. 2). After a person has become sufficiently proficient in a particular motor skill, they engage in "motor control", which is "the ability to plan and produce a movement that successfully achieves a particular goal" (p. 2). Success is considered a person achieving a particular performance outcome.

Motor learning is a relatively new field and combines two areas of study that both had their origins in the nineteenth century, but which remained unconnected right up to the late 1970s:

the branch of neurophysiology primarily concerned with the neural processes that are associated with (or are causes of) movements, with only slight reference to the movements themselves, and the branch of psychology and related fields primarily concerned with high-level skills with very little reference to the neurological mechanisms involved. (Schmidt & Lee, 1999, p. 6)

Neurophysiology originated in the 1870s, when physiologists such as the Englishman Charles Sherrington "discovered many of the basic mechanisms underlying the neural control of movement on which contemporary motor control theories are still grounded" (Edwards, 2011, p. 14).

Another physiologist, writing in the 1920s and 1930s, was the Russian Nikolai Bernstein, who also contributed to contemporary theories of motor control and motor learning. Bernstein, along with Eric von Holst, was one of the few exceptions who worked across the fields of neural control and motor behaviour. Bernstein's key work from the 1920s and 1930s, *The co-ordination and regulation of movement*, was not published in English until 1967; psychologist William Edwards cites this delay of nearly half a century in the transmission of Bernstein's ideas as one of the reasons why modern theories of motor learning and control only began to take shape in the US and elsewhere in the 1970s (Edwards, 2011, p. 16).

The Second World War had a strong influence on motor learning and motor control research. Program, such as the US Army Air Force's *Psycho-Motor Testing Program*, and the work of Arthur Melton, studied "underlying motor, perceptual, and intellectual abilities as they related to the selection of pilots and other military personnel" (Schmidt & Lee, 1999, p. 9):

The wartime programs, devoted to personnel selection and motor abilities, had not resulted in the success in pilot selection that had been anticipated. Researchers began to realise that training—not selection—was perhaps more important to the development of proficient pilots. Hence, much attention was directed toward procedures for teaching motor skills, the transfer of motor skills from one activity to another, and the retention of skills. (Schmidt & Lee, 1999, p. 9)

During the 1960s and 1970s, motor learning went through a transitional period searching for a new framework to effectively respond to the new cognitive zeitgeist. Richard Schmidt and Timothy Lee comment that in this period "the number of psychologists interested in motor behaviour research gradually declined, while the number of physical educators interested in these problems strongly increased" (Schmidt & Lee, 1999, p. 10). Chief among these physical educators was Franklin Henry, who was responsible for the growth of motor behaviour research in colleges in the 1960s and 1970s. In addition to experimenting with the fine-motor tasks, which traditionally had been the focus of psychologists, Henry also focused on whole-body activities; movements that included the "very rapid motor actions representative of activities in sports and games" (Schmidt & Lee, 1999, p. 11). The philosophy of the physical education movement at this time "was that experimental science is a source of new insights into the training of skills. The research that came from this movement was rationalized by the needs of physical education, but often it fit the mold of experimental psychology" (Adams, 1987, p. 58).

Although the thrust for the growth in research came from within physical education, some psychologists continued to conduct motor behaviour research including experiments with limb movement accuracy (Fitts & Peterson, 1964) and sensory feedback in relation to movement learning (Adams, 1971), but as Schmidt and Lee point out, "these were the exceptions" (Schmidt & Lee, 1999, p. 11).

By the 1970s, "research began to focus more on understanding the cognitive processes acting on the stimulus information to elicit the response, and less on determining the response outcome produced by our manipulation of certain stimulus variables" (Christina, 1987, p. 27). People now started to study motor behaviour and neural control concurrently, and research began to focus on finding links between "movement behaviors and neurological processes in order to provide a more complete understanding of how movements are controlled" (Schmidt & Lee, 1999, p. 13).

Schmidt and Lee discuss how new models of motor learning resulted in the move, in the 1970s, from the stimulus–response (S–R) model of movement learning to a process-of-information model:

Influenced by cognitive psychology, the motor behavior field seemed to undergo a transition from a *task orientation*, which focuses primarily on the effects of variables on the performance or learning of certain motor tasks (or both), to a *process orientation*, which focuses on the underlying mental or neural events that support or produce movements [...] Humans were considered processors of information, and this approach was an attempt to understand how movement information is coded and stored, how actions are represented in memory, and how information about errors is processed so that learning can occur. (Schmidt & Lee, 2011, p. 14)

By the mid-1970s, the information-processing model became the accepted model for the way humans went about encoding, storing and representing movement information in the brain, and how they learn by processing information about errors incurred during movement (Schmidt & Lee, 1999, p. 12).

Two new theories about motor learning that emerged at this time were those of cognitive psychologists Jack Adams (1971) and Richard Schmidt (Schmidt, 1975). These two theories addressed the limitations of outcome-oriented stimulus–response approaches to motor learning by examining how sensory feedback and motor programs were used to control movements. Both Adams' and Schimdt's motor learning theories stimulated the revival of interest in motor behaviour in psychology from the mid-1970s onwards.

2.4.1 Adams' closed-loop theory.

Jack Adams' closed-loop theory of motor learning is important to the development of Decision Training because it was in reaction to this theory, and its predecessor—William James' open-loop theory of motor learning—that Schmidt developed his schema theory of discrete motor learning, which underpins Step 1 of Decision Training.

Adams' closed-loop theory challenged the open-loop theory of motor learning proposed by behaviourist psychologist James, who posited that actions needed to be attended to only at their initiation; subsequent actions would be automatically stimulated to respond, a process he termed *response chaining* (James, 1890). Adams pointed out that this did not take into account a motor system's ability to self-correct movements in response to changes in the environment once the action had begun. In response to this, he proposed the closed-loop theory of feedback control, whereby conscious perception continuously adjusts muscle movements to self-correct an action. This was shown to work for the control of slow continuous movements, but not for other types of movement such as fast, ballistic muscle actions. Adams' theory was in direct contrast to the behaviourists' open-loop systems: in Adams' closed-loop system, sensory feedback "is fed back to a reference of correctness. The difference between the response and the reference is error and the system automatically corrects it" (Adams, 1987, p. 58).

2.4.2 Schmidt's schema theory.

Richard Schmidt challenged both open- and closed-loop theories by proposing that the information needed for motor actions was stored in the brain as *motor programs*. Schmidt cites psychologist Steven Keele's definition of the motor program as a sequence of commands stored in memory that is "structured before the movement begins and allows the entire sequence to be carried uninfluenced by peripheral feedback" (Keele, as cited in Schmidt, 1975, p. 231).

These motor programs can be clustered and can change in response to changes in the environment. Schmidt developed his schema theory for the learning of simple motor skills in 1975, to accommodate a greater range of movements than Adams' system—including fast movements, for which the closed-loop theory could not account. Schmidt's schema theory states that every time a movement is conducted, four pieces of information are gathered: the initial conditions, the details of the motor action, the results of the action and the sensory consequences of the action. Recall and recognition schema, or sets of rules for determining a movement, are constructed from this information: recall memory is "responsible for the production of movement" and recognition memory is "responsible for movement evaluation" (Araujo, 2010, p. 740).

One of Schmidt's criticisms of Adams' theory is that it relies heavily on response-produced feedback and, though it is able to accommodate slow movements, it cannot accommodate fast ballistic movements such as throwing and kicking. In contrast to closed-loop theory, schema theory focuses less on response-produced feedback and more on response variability (Adams, 1987, p. 60).

Schmidt's schema theory of discrete motor skill learning produced a comprehensive information-processing model that is still the key model for motor learning, whose importance is cited by Vickers as "One of the most comprehensive models that incorporates many of these cognitive areas", such as the seven cognitive abilities addressed in Step 1 of the Decision Training model (2007, p. 3).

2.5 Decision Training: Theoretical Underpinnings

In this section, I discuss the specific literature relating to Decision Training in more detail. The key reference for Decision Training is Joan Vickers' own 2007 book *Perception, cognition and decision training, the quiet eye in action*, in which she details Decision Training's specific theoretical underpinnings in the motor learning and motor control literature.

In the mid to late twentieth century, researchers began to show that alternative non-linear forms of training triggering cognitive engagement in the learning of physical skills demonstrated better results over the long term in the transfer, retention and application stages, when athletes needed to call up learnt skills from memory, and apply them in the variable conditions of a performance situation (e.g. a competition) (Shea & Morgan, 1979; Lee & Magill, 1983; Magill & Hall, 1990; Lee, Swinnen & Serrien, 1994; Schmidt & Lee, 1999; Vickers, Livingstone et al., 1999; Vickers, Reeves et al. 2004; Raab et al., 2005; Chambers & Vickers, 2006). The evidence from a large number of field studies in the areas of practice design, feedback and instruction was clearly showing what Vickers refers to as a "curious paradox in motor learning research. Although the gains in performance [of the direct behavioural methods] were impressive in the short term, they were not sustained over time, especially when new and unusual conditions were encountered" (Vickers, 2007, p. 163). (See Figure 3). Those "new and unusual conditions" referred to by Vickers relate to the performance of a skill when the learnt skills need to be recalled and applied in the variable conditions of play that take place in the performance or competition environment.



Figure 3. Behavioural vs Decision Training, comparing retention of skills over time (Based on Vickers, 2007, p. 163).

One of the key reasons for this learning reversal, described by Vickers and others, is that behaviourist training diminishes an athlete's ability to self-regulate. For example, the behavioural teaching tactics such as immediate direct feedback make students highly dependent on their teacher's external input, which in turn inhibits the student's own ability to self-assess their own performance, a form of self-regulation vital in high-level athletes (Chamber & Vickers, 2006, p. 184). So, in the variable and unstable performance situation, when analytical and decision-making skills need to be firing, and the right solutions need to be found for each piece of incoming information, the athlete cannot regulate their performance because the performance does not replicate the coach-dependent training environment to which they have become accustomed. In other words, the athletes have not learnt how to self-regulate their performance.

Another key piece of motor learning research that influenced ways in which Vickers applied practice design to the Decision Training model, was the discovery of *contextual interference*. This refers "to the interference that results from practising a task within the context of other tasks in a practice session" (Lee, Wulf, & Schmidt, 1992, p. 627), for example as happens in the "random practice" design strategy of Decision Training (Vickers, 2007, p. 167).

Richard Schmidt and Timothy Lee (1999) point to the first ground-breaking research on contextual interference, by psychologists John Shea and Robyn Morgan (Shea, 1979), as a turning point when new motor learning research started to show startling results that fundamentally challenged the traditional ways in which training practices were conducted. Shea and Morgan's results showed that although blocked practice (a traditional linear form of training where all the trials on a physical task are practiced before switching to the next physical task) was more effective than random practice in the acquisition phase of learning a physical task, random practice—which in Decision Training is "where the performer learns to combine different classes of movements within settings that simulate the conditions found in play and competition" (Vickers, 2007, p. 180)—proved more efficient in the ultimate transfer and retention of the task in performance.

Later, various studies, by Timothy Lee and Richard Magill (1983), and Magill and Kellie Hall (1990), also began to show how variation in the type of sequencing of exercises in a practice session could optimise learning, in contrast to traditional practice design. It was these studies combined with her own research that prompted Vickers to incorporate "variable practice" and "random practice" design into her Decision Training model.

At the same time, in addition to this research revealing the lack of effectiveness of linear blocked practice sequencing of exercises for the long-term retention of physical skills, studies investigating feedback delivery also revealed that some of the other traditional modes of teaching physical skills were less effective than strategies that triggered the athlete to think for themselves, or in other words, triggered the athlete to use a skill that Vickers refers to as "cognitive effort" (Chambers & Vickers, 2006; Lee, Swinnen & Serrien, 1994). Vickers' own research with Kristine Chambers (2006) showed how behaviourist training tactics, such as immediate and direct feedback given to competitive swimmers, were also not as effective in terms of performance outcomes as augmented or delayed feedback, which required the athlete to self-assess their own performance before being given feedback.

Extensive research (Schmidt, 1988; Schmidt et al., 1989; Swinnen et al. 1990; Magill, 1993; Bjork, 1994; Lee et al. 1994; Janelle et al, 1997; Vickers et al. 1999, 2004; Raab et al. 2005; Chambers and Vickers, 2006) shows that behaviourist teaching practices can actually inhibit retention of skills and therefore, ultimately, the performance of athletes. In response, Vickers placed a strong emphasis on creating teaching tools that can be used in a variety of ways to order to train the particular cognitive skill central to the successful application of motor actions in the complexity of a performance situation in which the athlete will be under stress and will need to make correct decisions.

2.5.1 The scientific foundations of Decision Training.

In her writing, Vickers details the scientific foundations of Decision Training and, although complex scientific discussion is beyond the scope of this thesis, it is important to have some understanding of how these theories inform Decision Training. These scientific foundations range from research in cognitive psychology, cognitive science and neuroscience, to gaze control (Vickers, 2007, p. 162). Formative influences on Vickers' Decision Training model will now be briefly reviewed, detailing specific, relevant research in:

a) cognitive psychology (Schmidt 1975; Schmidt & Lee, 2011)

b) ecological psychology (Gibson 1966, 1979)

c) dynamic systems (Bernstein 1967, Turvey 1977, Kelso 1995)

d) constraints-led perspective (Newell 1986) (Vickers, 2007, p. 4)

e) research on visual attention and gaze control studies of athletes in sports contexts that play an important part in Vickers' approach

f) various selected studies from the last 20 years that have tested Decision Training in real-world contexts.

2.5.2 Cognitive psychology as a foundation of Decision Training.

Vickers writes that cognitive psychology looks at motor learning and control as a form of information processing involving "indirect perception", which she terms as "the act of perceiving", which "involves the intervention of memories and knowledge representations stored in the brain" (2007, p. 4). Robert and Karin Sternberg, in their book *Cognitive psychology*, define cognitive psychology as "the study of how people perceive, learn, remember, and think about information" (Sternberg & Sternberg, 2009, 2012, p. 3). Cognitive psychologists draw on the idea of information processing as a model for cognition that focuses on, "Processes of knowing, including attending, remembering, and reasoning; also the content of the process, such as concepts and memories" (APA, 2014). Vickers writes that cognitive psychologists see information processing in terms of "the cognitive processes of sensation, perception, anticipation, attention, pattern recognition, memory, problem solving, and decision-making" (Vickers 2007, p. 11). These cognitive processes form six of the seven Step 1 cognitive abilities in the Decision Training model, a step that consists of the teacher identifying the actual cognitive weakness of the athlete and "the decisions that athletes have to make" (p. 166).

Although Schmidt's schema theory is still the key model for the way movement information is processed, learnt and performed, Vickers notes that there is still no "concrete way of measuring information used in cognitive processing" (Vickers, 2007, p. 2). In several areas, including that of intrinsic (internal) and extrinsic (external) feedback in relation to long-term retention and performance of skills, several commentators—including Schmidt himself (Schmidt, 2003)—have suggested that there is the potential for a new schema theory that addresses new research that shows how delayed, variable and "bandwidth feedback" (a form of feedback used in Decision Training discussed later in this chapter) positively affect long-term retention of motor skills.

Vickers writes that, "cognitive psychologists have developed a number of cognitive psychology sub-areas that together define how information is acquired and processed within specific domains or areas of interest and the effect this processing has on human behavior" (Vickers, 2007, p. 2). These sub-areas include "attention, consciousness, memory, language, problem solving, decision-making and reasoning, creativity, cognitive development, intelligence and expertise, and artificial intelligence, robotics, human factors and ergonomics" (Vickers, 2007, p. 2).

In the Decision Training model, seven cognitive skills are identified: attention, focus and concentration, memory, pattern recognition, problem solving, decision making and anticipation. Vickers' rationale for focusing on these seven areas is that:

Sport performers must be able to anticipate what is most important in the environment in which they play. They must be able to attend to critical cues and concentrate at appropriate moments. They must be able to retrieve from memory the information that is needed at the right time, solve problems when they arise, and ultimately make the right decision under time constraints. (Vickers, 2007, p. 3)

Although descriptions of complex neuroscience are beyond the scope of this thesis, it is worth mentioning that Vickers points out two neurological processes— "synaptogenesis and neurogenesis"—that "are facilitated in enriched environments that provide physical activity and decision-making opportunities" (Vickers, 2007, p. 29). Synaptogenesis is when the brain changes at a cellular level throughout our adult lives from birth. Vickers refers to the work of Peter Eriksson and colleagues, who, in 1998, demonstrated that the capacity to generate new neurons in the human brain, or neurogenesis, was a possibility, and that "the human hippocampus [a part of the brain associated with learning and memory formation] retains its ability to generate neurons throughout life" (Eriksson et al., p. 1313). In relation to Decision Training, Vickers discusses research showing the relationship between physical activity, and neurogenesis and synaptogenesis:

Intriguing new evidence shows that physical activity is one of the main ways the brain improves, and the effect of physical activity on both neurogenesis and synaptogenesis is much greater than was previously thought. When physical activity occurs within an enriched [cognitively stimulating] environment involving extensive physical activity and Decision Training, the gains are even greater. (Vickers, 2007, p. 31)

Vickers details four important issues that emerge out of this research from cognitive psychology and neuroscience that are important for sports teachers and coaches:

- Training environments that are physically and mentally enriched stimulate the development of the brain in positive and productive ways.
- Athletes of all ages need to be physically engaged in exercise that is psychologically stimulating.
- Exercises should have meaning and be performed in environments where high levels of cognitive effort and decision-making are required.
- Voluntary exercise where decision making is promoted produces greater longerterm gains in learning than does enforced exercise. (Vickers, 2007, p. 32)

2.5.3 Ecological psychology.

Another theoretical underpinning of Decision Training cited by Vickers is ecological psychology, which is based on the work of US psychologist James Gibson (1979). Vickers defines "ecological psychology", in contrast to cognitive psychology, as involving "direct perception", meaning "that movement through the world is dependent on the establishment of direct optical relationships that develop without any apparent need for the many processing stages described in cognitive psychology" (Vickers, 2007, p. 4). In relation to Gibson's ideas, Robert Christina writes that: Gibson's perspective holds that the environment structures our surroundings and that it is this structure to which our perceptual systems are responsive. The ecological approach assumes that person and environment are not logically separable, which is contrary to what is assumed by the information processing approach. (Christina, 1987, p. 28)

Given the critical link between visual perception and action within an environment, ecological psychology is an important perspective in motor learning and performance theory. Gibson's discovery of optic array and optic flow describes "how the head is always moving relative to the environment and so the animal's view of the world is constantly changing. This means that the ecological stimulus for vision is a globally changing optic array or optic flow field" and, like physical activity, it is "inherently spatio-temporal" (Lee, 1980, p. 169).

In the context of research conducted by ecological psychologists, "A study is considered to be ecologically valid when its methods, materials, and the setting of experiments approximate the real-life situation that underlies the study" (Vickers 2007, p. 11). Vickers' own studies with swimmers and hockey, baseball and basketball players are examples of ecologically valid studies. This notion of ecological validity is applied in the Decision Training model in strategies used in training to replicate the conditions an athlete will experience in a performance situation. This study itself could be seen as having a high degree of ecological validity in that it was conducted over an extended period in which Decision Training strategies replicating performance situations were applied *in situ* in the training studio.

2.5.4 Dynamic systems approach.

The next important theoretical influence on Decision Training cited by Vickers is based on the work of the Russian neurophysiologist Nikolai Bernstein. His dynamic systems theory veers away from the cognitive psychology approach, opting to study motor learning and control from the perspective of coordinated action and the concept of "self-organisation" (Kelso, 1995). Bernstein influenced a whole field of motor control research, with dynamic systems researchers working in the areas of the "degrees of freedom", "context-conditional variability" (variability due to anatomical, mechanical, and physiological variability) (Turvey et al., 1982) and "self-organisation" (Kelso, 1995). Vickers writes, "researchers of dynamic systems attach little importance to higher level cognitive processes, but instead study the behavior of the joints and muscles using biomechanics, quantum physics, and other approaches" (Vickers, 2007, p. 6). Schmidt notes that:

Bernstein's idea was that if the information-processing systems were involved in the production of all the decisions about each of the muscles participating in a motor act, it would be difficult to imagine how this would explain all the mental work involved in producing even a simple act [...] The fundamental concern is that the system has too many independent states that must be controlled at the same time. These independent states [in the dynamic systems approach] are called degrees of freedom. (Schmidt & Lee, 2011, p. 190)

Vickers writes that "the degrees of freedom of a movement is the number of separate independent elements that must be controlled in the body to produce a coordinated action" (Vickers, 2007, p. 6). The degrees of freedom problem, Michael Turvey writes, is a question of how these independent states are controlled by the nervous system: "Regardless of the size of the [motor] unit controlled, how are all those independent units regulated?" (Turvey et al., 1982, p. 246).Vickers goes on to note that Bernstein and others:

further explained that when we first learn a skill, we tend to freeze the degrees of freedom in a way that limits coordination and control. Then as the skill is acquired, we free some of the degrees of freedom, thus allowing the movement to be performed more efficiently and accurately. Finally, we learn to exploit degrees of freedom, an evolution in skill development that is needed to perform at a high level in any context. Freezing, freeing, and exploiting the degrees of freedom therefore can be viewed as stages the performer goes through in the attainment of higher levels of skill. (Vickers, 2007, p. 6)

In the dynamic systems approach to motor learning, Turvey and his fellow researchers (Fitch & Turvey, 1978; Fowler & Turvey, 1978) combined "Bernstein's ideas on degrees of freedom, context-conditional sensitivity [variability due to anatomical, mechanical, and physiological variability], and functional synergy (i.e. coordinative structure) with the ecological perspective of James Gibson (1966, 1977, 1979)" (Christina, 1987, p. 28). Coordinative structure used in this context is defined "as a group of muscles often spanning several joints that is constrained to act as a single functional unit" (Tuller et al., 1982, p. 253).

Another key idea coming out of the dynamic systems perspective is neuroscientist JA Scott Kelso's concept of "self-organisation", in which "patterns in
general emerge in a self-organized fashion, without any agent-like entity ordering the elements, telling them when and where to go", and that there are "principles of self-organization" that "lie behind all structure or pattern formation" (Kelso, 1995, pp. 1-2). In relation to this "the brain itself is an active, self-organizing system" (Kelso, 1995, p.2).

As this literature review moves through these different motor learning theories, it reveals how Vickers has accumulated a broad scientific theoretical foundation upon which to base Decision Training—developing a multi-theoretical approach to the creation of a hands-on training model able to be used in training and performance contexts. This leads to one of the most important theoretical components of Decision Training—the constraints-led perspective of Alan Newell (1986), which incorporates aspects of the cognitive psychology, ecological psychology, and dynamic systems approaches previously discussed.

2.5.5 Constraints-led perspective.

Vickers herself describes the "theoretical scaffolding" of Decision Training as "an adaption of the constraints-led model" (Vickers, 2007, p. 1). The "constraints-led perspective" involves three categories of constraints (organism, task and environment) that interact with each other to determine optimal patterns of coordination and control of movements (Newell, 1986).

The constraints-led model is important to discuss as it is aligned with the way Decision Training works to try to create training scenarios that represent real-world performance contexts. From a learning perspective, the constraints-led model proposes that learning is context related:

From the constraints-led perspective, a learner will only develop effective skills in any activity if the learning takes place within the appropriate context. What this means is that for an action to be effective a learner must first perceive and interpret relevant information, which in turn will lead to relevant action. This perception–action mutuality is understood to be a cyclical structure that is often called the information–movement coupling. (Brymer & Renshaw, 2010, p. 8)

Organismic constraints take the form of "biological and functional aspects of a person, such as body weight, height, and shape, as well as synaptic connections that control cognitive and body functions" (Vickers, 2007, p. 8). Taking a step closer to the application of organismic constraints in relation to athletes and Decision Training,

Vickers writes that these constraints in an athlete are "physiology, height, maturation, and acquired skill level" (p. 8), but also the level of the athlete's cognitive skills of gaze control and attention, which are both able to be trained.

Environmental constraints "are generally recognised as those constraints that are external to the organism" and these "may include gravity, natural ambient temperature, natural light and other environmental features that are not usually adaptations of the task. However, these environmental features can be manipulated for a given individual by changing the environment in which the activity takes place" (Newell, 1986, pp. 350-351).

Newell discusses the idea of task constraints in terms of constraints in relation to "the goal of the activity and specific constraints imposed. Three categories of task constraints are proposed. These relate to 1) goal of the task; 2) rules specifying or constraining response dynamics; and 3) implements or machines specifying or constraining response dynamics" (Newell, 1986, p. 352). Newell goes on to say that "Skilled performance, as reflected in the optimal pattern of coordination and control, will be determined in the interaction of the organismic, environmental and task constraints" (p. 352).

Alan Newell's constraints-led model envisages the information flowing from the "perception and action cycle" as affected by the constraints that influence the motor task, leading to the resultant motor activity in terms of coordinated movement.

Karl M Newell et al. (1990) (to clarify, Karl M Newell and Alan Newell are two different researchers working in this area) point out that the idea of perceptual–motor workspaces:

is drawn from the broader agenda of the ecological approach to perception and action (Gibson, 1979; Kugler & Turvey, 1987, Turvey & Kugler, 1984). Kugler and Turvey (1987) define the perceptual–motor workspace as that dynamic interface between the informational flows arising from perception and the kinetic flows arising from action. (Newell et al. 1990, p. 96)

Karl M Newell et al. (1990) go on to say that skill acquisition may be considered as a "task-relevant mapping of perception and action" (p. 97) in the perceptual–action workspace. Further, they write that the:

layout of the perceptual-motor workspace is non-stationary. Although the task and environmental constraints may remain constant, the organismic constraints are constantly changing because the process of search/practice/activity acts to modify the learner in some way. Consequently the perceptual-action workspace is also continually modified. (pp. 97-98)

For Decision Training, the importance of perception–action cycles happening in perceptual–motor workspaces—as described by the constraints-led perspective—is that it is within the perceptual–motor workspace that "visual information is acquired and critical decisions are made that affect sport performance" (Vickers, 2007, p.10).

For Vickers, her interest in the constraints-led perspective lies in how perception, in the form of the athlete's gaze, is coupled with their actions. The next section overviews gaze control studies, which further inform the theoretical basis of Decision Training.

2.5.6 Gaze control.

Vickers pioneered the use of mobile eye trackers to create and test perceptualmotor workspaces that reflected an athlete doing "real world" tasks, in real time, in specific performance contexts (Vickers, 2007, p. 10). Results from this research showed that rather than there just being one abstract "generic perception–action cycle existing for all motor tasks, the gaze behaviors of performers may be grouped into three large gaze control categories as found in targeting tasks, interceptive timing tasks, and tactical tasks" (Vickers, 2007, p. 10), and that all these categories use distinctive types of gaze control:

For example, in basketball, gaze control when shooting (a targeting task) differs from gaze control when receiving a pass (an interceptive timing task), which in turn differs from the gaze control when reading a zone defence or executing a fast break (a tactical task). (Vickers, 2007, p. 10)

These types of gaze behaviours are critical in circus arts where there is a complex interaction of perceptual information and kinetic information happening within discipline-specific contexts. For example, the three case studies that will be discussed in the next chapter involve three students: a juggler, an acrobat and a dance trapeze artist. In each discipline, in each case study, the circus artist was required to perform specific tasks in specific environments—the juggler with the diabolos, the acrobat on the trampoline, and dancer–gymnast on the dance trapeze. All of these require different interactions of different types of gaze control.

Vickers adapts Newell's original model of constraints>perception/action cycle>coordination to include the addition of the gaze control categories of targeting, interceptive timing and tactical tasks.

2.5.7 The "quiet eye" phenomenon.

Vickers describes various types of gaze behaviours, including "fixations, pursuit trackings, saccades, blinks" (Vickers, 2007, p. 10-11). Pursuit tracking "occurs when the gaze follows a moving object, such as a ball or a person" (p. 20) for a minimum of 100 milliseconds. Both a fixation and a pursuit tracking are defined by the 100-millisecond threshold, this being the minimum time needed for the gaze to be stabilised to allow for the information to be processed by the individual.

Fixations and pursuit tracking differ from saccades and blinks because these are too fast to "permit conscious information processing" (Vickers, 2007, p. 20). Saccades are rapid eye movements that "occur when the eyes move quickly from one fixated or tracked location to another" (p. 20). Blinking is "essential for refreshing the cornea and lens and for maintaining vision. During blinks information is also suppressed (Volkmann, Riggs, & Moore, 1981)" (p. 20). However, Vickers' research established that one type of gaze has emerged as underlying "higher levels of skill and performance in a wide range of sports tasks" and this is what she terms the "quiet eye".

Vickers describes how the visual angle "indicates the size of an image in the retina, and it is determined by extending lines from the edges of the object as viewed in space through the lens to the retina" (Vickers, 2007, p. 21). The "quiet eye", which Vickers discovered, is a final fixation or tracking gaze in elite athletes that:

is located on a specific location or object in the visuomotor workspace within 3° of visual angle for a minimum of 100ms. Since elite performers exhibit an optimal control of the quiet eye relative to the final movement, the quiet eye may be viewed as an objective measure of optimal perceptual–motor coordination. (Vickers, 2007, p. 11)

Further, Vickers reports that, "the quiet eye of elite athletes is both earlier and longer than that of athletes with lower level skills" and that the quiet eye is a skill that can be trained in an athlete: "such training has been shown to contribute to unusually large increases in performance (Harle & Vickers, 2001; Oudejans, Koedijker, Bleijendaal, & Bakker, 2005; Vickers, Morton, & Panchuk, [one the first non-sport based gaze control studies with elite ballet dancers, 2006])" (Vickers, 2007, p. 11). The testing of the "quiet eye" has been extensive, and Vickers lists "some studies where the quiet eye has been shown to be a characteristic of higher levels of sport performance" (Vickers, 2007, p. 11):

Golf (Vickers, 1992; Vickers, 2004); Basketball (Harle & Vickers, 2001; Oudejans, Koedijker, Bleijendaal, & Bakker, 2005; Oudejans, van de Langenberg, & Hutter, 2002; Vickers, 1996a, b, c); Volleyball (Adolphe, Vickers, & LaPlante, 1997; Vickers & Adolphe, 1997; McPherson & Vickers, 2004); Darts (Vickers, Rodrigues, & Edworthy, 2000); Rifle shooting (Janelle et al., 2000; Vickers & Williams, in press); Billiards (Williams, Singer, & Frehlich, 2002); Table tennis (Rodrigues et al., 2002; Williams, Vickers, & Rodrigues, 2002); Ice hockey tactics (Martell & Vickers, 2004); Ice hockey goaltending (Panchuk & Vickers, 2006). (Vickers, 2007, p. 11).

Vickers' own research with mobile eye-tracking technology and her discovery of the "quiet eye" phenomenon of gaze fixation in elite athletes (Panchuk & Vickers, 2006), disproved one of Gibson's ideas—that prolonged fixation did not occur in real life. Although at the NCS there was no access to a mobile eye-tracking device for the current research, work was done with the student in Case Study 2 on gaze control and head position, with the use of a head-mounted camera. The footage taken helped him to search for the correct visual cues needed for correct performance of a trampoline skill. We also worked with him to train him to prolong the tracking time on those cues in the performance of a trampoline skill.

The theories I have reviewed so far in this section form the theoretical underpinning of Decision Training as noted by Vickers. In summary, these theoretical underpinnings comprise:

- cognitive psychology's "concept of information processing and the cognitive processes of sensation, perception, anticipation, attention, pattern recognition, memory, problem solving, and decision-making" (Vickers, 2007, p. 11)
- ecological psychology with "the concepts of direct perception, invariances, optic array, optic flow, and affordances" (p. 11)
- dynamic systems with "the notion of degrees of freedom and their freezing, freeing, and exploitation and self-organisation" (p. 11)
- the constraints-led perspective, which "attempts to pull together many of the competing views contained in the cognitive, ecological, and dynamic systems theories" and "explains that organismic constraints, environmental constraints,

and task constraints all influence the perception-action cycle as found in specific perceptual-motor workspaces" (p. 11)

gaze control and the work of Vickers and others in this area that investigates three broad categories of gaze control—targeting, interceptive timing, and tactical tasks—that are found in sports activities, with the quiet eye being discovered as a form of fixation linked to superior performance present in elitelevel athletes.

2.6 Studies in Decision Training

In this section, I will present some examples of real-world testing of Vickers' training model. Specific studies have investigated the effectiveness of Decision Training methods in the areas of practice design, feedback and instruction.

Studies testing the efficacy of Decision Training have taken place since the mid-1990s, and have shown its effectiveness in real-world sport situations. The results of these studies confirm the contemporary view that physical expertise involves high levels of cognitive skill. However, Chambers and Vickers note that "Despite the emergence of critical perceptual and cognitive skills that underlie the performance of all motor skills, motor learning is still primarily defined and measured in terms of observable motor behavior" and that "although a strong theoretical grounding exists in perception and cognition, studies are only beginning to measure these areas" (Chambers & Vickers, 2006, p. 185). It is little wonder, therefore, that coaches are by and large unaware of research highlighting the cognitive approach to learning physical skills, and that coaching practices are still deeply preoccupied with short-term behavioural outcomes.

The studies that I will discuss investigate specifically the effectiveness of Decision Training when compared to behavioural training. These include Markus Raab et al. (2005) who worked with elite table tennis players; Vickers et al. (1999) who conducted a study on baseball hitting; and a study with competitive swimmers in 2006 by Chambers and Vickers that showed the effectiveness of a Decision Training strategy called "bandwidth feedback", which limits direct immediate feedback when an athlete is within a desired band of performance (see *Figure 4*).



Figure 4. "Bandwidth feedback" (Based on Vickers, 2007, p. 201). The crosses represent where an athlete's performance registered on several attempts at a physical task in relation to a desired 'band' of performance. For example, in trampolining, when the teacher requires the student to reach a certain rebound height before commencing a trick, the student could jump too high or too low. When the student jumps at a height that is close to the desired target height, in the bandwidth zone, then deferred or delayed feedback, or no feedback is given. When the student jumps to a height that is higher or lower than the desired height, outside of the bandwidth of desired performance, direct and immediate feedback is given.

2.6.1 Existing case studies of the use of Decision Training in sport.

In their 2005 study, Raab et al. compared two groups of elite table tennis players of equal skill levels—one trained with behavioural techniques, the other with Decision Training techniques using video feedback and video modelling. The training for the second group was designed "to improve not only the ability to hit the ball but also to select the best shot as quickly as possible. The results showed that in post-tests of both technique (how) and tactical decision making (what), the performance of the group trained with behavioural methods did not benefit as much as the group trained with decision training video techniques:

Previously, benefits of decision training over behavioral training were found only after extended periods of practice (Vickers, 2003). Our findings suggest that benefits are apparent even during the early stages of the training season by presenting 'how' and 'what' decisions on videos. (Raab et al., 2005, p. 342)

With Vickers' study of baseball hitting in 1999, behavioural training was also compared to Decision Training with groups of various skill levels. The behavioural group was given "abundant feedback from the instructors and peers". "Bandwidth feedback" was given to the Decision Training group "where feedback was deliberately reduced as their skill level improved" (Vickers, 2007, p. 171). This study showed that Decision Training methods "were beneficial for higher-skilled groups but were not as effective for the novices" (p. 174) and also there was a delay in improvement that is often experienced when using Decision Training. In the 1999 study, Vickers gives an example of this delay from another study by Stephanie Doane et al. (1996) in a comparison between two types of instruction: "easy first", where participants were asked to perform low-level tasks first, and then more complex tasks (in this case discriminating between polygons of low complexity before moving on to polygons of high complexity); and "hard first", where participants "were trained to identify the most complex polygons from the outset, followed by easy shapes in later sessions" (Vickers et al., 1999, p. 358). The results from Doane et al.'s study showed similar findings to other learning studies that noted a similar learning reversal, namely that "the 'easy first' group excelled in the early sessions but were unable to equal the performance of the 'hard first' group during the later sessions" (p. 358).

In the 2006 study by Chambers and Vickers, the researchers wanted to test in a real-world setting an alternative to the traditional way of using augmented feedback, which is where the teacher or coach uses verbal statements or visual aids to *augment* external evidence of success or failure. For years, researchers and educators seemed content with following the general view on the role of augmented feedback in motor learning; namely that the use of augmented feedback is most effective when it is provided as soon after the performance as possible, as often as possible, and in such a way as to reduce performance errors as efficiently as possible (Lee, Swinnen & Serrien, 1994, p. 332).

Schmidt had shown that this traditional view was based on a misreading of "previously published experiments" (Lee et al., 1994, p. 332) that considered only changes of behaviour in practice and failed to consider data from retention and transfer tests; that is, testing that showed how a task learnt in a training situation was retained and then transferred to a performance situation such as a real sports match or in a novel variation of the learnt task (Schmidt, 1991, 2011). Schmidt reviewed the data from the

retention and transfer tests of these studies and conducted new studies, and showed that the data actually presented a very different view:

the provision of instantaneous feedback during practice tends to detract the learner from interpreting intrinsic sources of feedback, such as vision and proprioception. Schmidt suggests that it is these sources of feedback that one must learn to interpret since they will always be available to the learner. Augmented feedback (such as the feedback received from the teacher) will not always be available (e.g., during a game). Indeed the goal in most learning situations is for the learner to become independent of the teacher. Learning to rely upon the information provided by these people will ultimately be detrimental to achieving independence. (Lee et al., 1994, p. 336)

Chambers and Vickers' study explored the Decision Training tool, "bandwidth feedback", which limits direct immediate feedback when an athlete is within a desired band of performance. It also investigated "questioning", which in its specific use in Decision Training is a teaching tool to be used in the delay between the athlete's performance and their own self-assessment when they are in the bandwidth of performance. Working with competitive swimmers and investigating the effect of these Decision Training tools on swim times, Chambers and Vickers wanted to examine a number of problems related to "bandwidth feedback" in some training situations where it was implemented. These problems included the athletes' perception that they were being neglected by their trainers when they reduced or delayed feedback, and the perception of parents and administrators "who interpreted a reduction in observable feedback as a failure on the part of coaches to provide the continual support long associated with traditional methods of coaching" (Chambers & Vickers, 2006, p. 187). Finally, there was a problem with whether the coach can determine whether athletes are focusing on the correct problems and making the right decisions when feedback was reduced or delayed. The inclusion of questioning was included in this study to determine whether "As external information about performance is reduced, coaches can elicit intrinsic awareness through questioning while maintaining, even increasing, productive communication with athletes" (p. 187).

The Chambers and Vickers study notes the predominance of feedback studies that examined "knowledge of results" and the lack of studies that examined the realworld performance situation, or the "knowledge of performance" (Schmidt, 1991, 2011). An exception to this was Janelle et al. (1997) who investigated "the effect of personal control over feedback on the performance of a non-dominant throwing skill" (Chambers & Vickers, 2006, p. 186). Various groups were compared from a group receiving no "knowledge of performance" information and just "knowledge of results", a group that received summary "knowledge of performance" information after every five trials, through to a self-controlled group that received "knowledge of performance" only when it was requested. The results showed that the self-controlled group "scored better on form and accuracy" in transfer testing. In addition, the self-controlled group requested less and less feedback, or what is termed "faded feedback", as their performance improved.

Chambers and Vickers note that, "Based on the research, bandwidth feedback appeared to be a highly effective method of improving long-term performance, particularly when self regulation was emphasized and participants were encouraged to ask for their own feedback" (Chambers & Vickers, 2006, p. 186). In the study, coaches were videotaped in practice sessions with 24 competitive swimmers of similar levels of experience working with two coaches, one using "bandwidth feedback" with "questioning" (BF-Q) and the other not. The BF-Q coach was trained in the use of these Decision Training tools, whereas the other coach continued with the usual traditional teaching method. The results confirmed the effectiveness of BF-Q over the long term and that, even though behaviourally trained athletes improve more over the short term in relation to decision-trained athletes, the long-term gains of the decision-trained athletes proved superior: "From Post-Transfer, the BF-Q group had superior results in competition (cTIME), exceeding gains made by the Control group from Pre-Post" (p. 193). Chambers and Vickers note that the study highlights the effects of self-regulation as a means of improving athlete performance: "These results emphasize the importance of self-regulation, personal control, and active learning to efficient and heightened skill acquisition" (p. 193).

2.7 Learning and Teaching Styles

This section reviews learning and teaching styles theory, which informs what emerged as an important theme in the research findings; that is, the effect of learning and teaching styles on the use of Decision Training in this project. Learning and teaching styles theory is an area that is particularly applicable for the NCS because of the diversity of learning and teaching practice, and variety of student and teacher backgrounds at the school, as is reflected in the range of backgrounds and practice in the participants in this project. In addition, the inclusion of creative practice and artistic performance as learning outcomes increases the diversity and complexity of circus training. This diversity in training means there are many more factors in play than in a regular sports situation where everyone is involved in the same discipline playing under similar conditions.

2.7.1 Learning styles.

Brunner and Hill (1992) detail extensive research that shows the importance of how each student learns differently:

Research with gifted (Cody, 1983; Perrin, 1984), special education (Brunner & Majewski 1990), high-risk youngsters (Gadwa & Griggs, 1985; Griggs & Dunn, 1988; Dunn et al., 1990), and "average" students (DeBello, 1985; Dunn et al., 1986; Hodges, 1985; Lynch, 1981; Perrin, 1990; Dunn et al., 1990) has provided consistent documentation that student achievement increased significantly in classrooms where individual learning styles were identified and accommodated. (Brunner & Hill, 1992, p. 26)

They note how "Student motivation to learning often increases in classrooms where different learning styles are accommodated" and, importantly for this research, how when instruction was geared towards preferred learning styles or students' "perceptual strengths", higher test scores were achieved. They write how:

Numerous studies over the last ten years demonstrated that when students were taught with instructional resources that matched their perceptual strengths (visual, auditory, tactual or kinesthetic) they achieved higher test scores than when taught with techniques which were mismatched with their preferences (Dunn, 1988). Scores increased even more dramatically when new knowledge and skills were reinforced through students' secondary and tertiary perceptual strengths. Athletic skills, of course, are learned only after numerous repetitions; but would the same amount of repetition be necessary if students' styles were accommodated? Using a learning styles model for teaching and reinforcing athletic skills may hold promise for increasing coaching efficiency. (Brunner & Hill, 1992, p. 27)

These comments speak to the same concerns about linear training and repetition in traditional sports coaching that the Decision Training model addresses with its random and variable training practice design. There is a wide range of learning styles theories, inventories and instruments for measuring learning styles and learning style categories, so I will briefly overview the ones I have drawn on in this thesis where I discuss the influence of learning and teaching styles on the adoption of Decision Training interventions.

Cassidy (2004), in his extensive review of theories and models of learning styles, discusses the differences between "cognitive style"—being "an individual's typical or habitual mode of problem solving, thinking, perceiving and remembering"— and "learning style", as having a broader frame of reference writing that it is used to "reflect a concern with the application of cognitive style in a learning situation (Riding & Cheema, 1991)" (pp. 420-421).

Ian Fuelsher et al. give a definition of learning style as, "a learner's preferred ways of responding (cognitively and behaviorally) to learning tasks. It has been defined as a state-like learning preference, that is, a learning preference that changes depending on the learning environment or context" (2012).

Interest in learning styles since the early 1980s has been sparked by the work of educational theorist David Kolb (1984), who based his "experiential learning theory" on the constructivist ideas of learning of Piaget (1929), Dewey (1938) and Vygotsky (1978). Kolb put forward what he termed "the experiential learning cycle" of "concrete experience, reflective observation, abstract conceptualisation, and active experimentation" (1984). These four stages of learning move from: 1) experiencing by doing something, to 2) reviewing or reflecting on what happened, to 3) drawing conclusions, to 4) planning what to do next.

Kolb's learning theory, which in many ways mirrors the action research cycle, led to a whole industry being built up around the idea of learning styles. Dominant theories include Dunn, Dunn and Price's (1987) "learning styles inventory" (LSI), a means to identify learning styles of students; Reid's (1987) visual, auditory, kinaesthetic, tactile, group and individual categories of learning style; linking by Honey and Mumford (1986a) of the stages in Kolb's learning cycle with the specific learning styles of "activist" (experiencing), "reflector" (reviewing), "theorist" (concluding, and "pragmatist" (planning); and Neil Fleming's VARK categories of learning styles in his "visual, auditory, read/write, kinaesthetic learning style inventory" (Fleming & Bonwell, 1998).

However, though there has been extensive research in educational learning theory for the class room, Jones et al. (2008), Brunner and Hill (1992) and Fuelscher et

al. (2012) remark on the lack of studies of preferred learning styles and instruments to identify them in sports-related disciplines. Peters et al. (2008) contend that:

Few recent investigations, however, have addressed the issues of preferred learning styles in sports-related disciplines such as sports studies, sports and exercise science, coaching science, sport and leisure management and outdoor recreation management. Indeed, research that has been published examining learning styles in sports-related programmes is either dated (Pettigrew and Zakrajsek 1984), focused solely on physical education (Coker 1997, 2000; Gong, Hu, and Lew 1997), or exhibits a considerable bias towards research in American institutions (Harrelson, Leaver-Dunn, and Wright 1998; Szucs, Hawden, and McGuire 2001). (Peters et al., 2008, p. 157)

Another learning theory of interest is Anthony Grasha's "competitive", "collaborative", "avoidant", "participant", "dependent", and "independent" learning style categories (1994, 1996; Grasha & Yarbanger, 2000). Grasha's approach is of interest as it relates to something that I set out to explore in this research—the idea of learning and teaching as "lived experience", based around "the needs, emotions, motives, beliefs, and attitudes we possess about how to learn and how to teach" (2000, p. 3).

In the study's research findings, discussed later in this thesis, I argue that learning styles played a key part in the study particularly with respect to the diversity of backgrounds of students as represented in the three case studies. The findings in this research study agree with the view that habitual cognitive style is a significant component of learning style (Cassidy, 2004), such as when Student 1's habitual "analytical" cognitive approach to training matched certain Decision Training exercises and not others that were more "intuitive". For example, when the teacher taught specific cognitive cue exercises that were analytical in nature—such as measuring the height of a throw or reproducing set sequences on a numbered grid—this suited the student's learning style; whereas other exercises that were more "intuitive" such as "kinaesthetic" cue exercises like feeling the flow of movement through the body, did not match the student's preferred cognitive skill.

In relation to this idea of a connection between analytical and intuitive cognitive style preference and learning tasks, Allinson and Hayes (2002) reference the cognitive continuum theory (Hammond et al., 1987):

Hammond and his colleagues propose two continua: one for cognitive mode, ranging from analysis at one end to intuition at the other; one for tasks, ranging from the analysis-inducing to the intuition-inducing. They contend that individuals 'oscillate' between the poles of the cognitive continuum in order to respond to the cognitive demands of the task. The greater the correspondence between the cognitive style used and the task demands, the better the task performance is likely to be. Associated with the idea of a cognitive continuum is the notion that individuals will have a preference for, or disposition towards, a particular cognitive mode. (p. 5)

As Reid (1987) points out, learning styles may not be fixed modes of behaviour but may change depending on the situation or learning task, as was revealed in several of the case studies. This was clear in findings from Case Study 2 where the student's "intuitive" learning preference for "adopting new and innovative approaches when learning skills or techniques" was used to develop a new learning strategy through "sequential learning"; that is, to "gather and understand information in logical steps, before piecing everything together in the form of learning behaviour" (Farrow, Hall & Diment, 2008). Reid points out that "If educators can assume that learning styles are adaptable, that learning style preferences can be identified and modified, and that unconscious or subconscious learning styles can become conscious learning strategies, then students [...] should be exposed to the concept of learning styles" (1987, p. 101).

Moving closer to how this research can be employed in a consideration of learning styles in the circus arts, Brunner and Hill (1992) suggest that particular aspects of recent work done on learning style theory are applicable to athletic coaching. In particular, they discuss what parts of existing procedures used to determine an individual's learning style/s in classroom settings, such as Dunn et al.'s (1987) LSI, are applicable to sports training. The LSI has been used in research at more than 60 institutions of higher education (Dunn, 1990): "The instrument allows analysis of the conditions under which students in grades 3 through 12 prefer to learn through an assessment of 23 elements of instructional environments" (Brunner & Hill, 1992, p. 26).

These 23 elements are divided into five sub-categories:

- "immediate environment", in relation to level of sound, the temperature, light, and formal or informal seating design
- "emotionality" in relation to "motivation, persistence, responsibility/conformity, and high or low structure"

- "sociological" or grouping preferences in relation to "learning alone, learning with peers, learning with adults present, learning in combined ways, being motivated by the teacher, and being motivated by a parent"
- "physiological" characteristics in relation to "auditory, visual, tactile, and kinesthetic or whole-body involvement, perceptual preferences, energy levels during the day or evening, intake needs, and mobility requirements"
- "psychological" inclinations in relation to "global/analytic, hemispheric preference", i.e. left brain being associated with analytical preference and right brain being associated with global holistic preference, and "impulsive/reflective" preference for learning (p. 26).

Brunner and Hill point out that although these preferences were based on research done in the school classroom, specifically grades 3 through 12, they do not all necessarily apply to athletic coaching:

While it is possible to consider all 23 elements of the learning styles model when designing a classroom or planning instruction, certain elements are central to a coach's ability to accommodate student athletes. Those elements are the sociological (preference for learning alone, in pairs, with a group of peers, as a team member, or with adult supervision) and the perceptual (auditory, visual, or tactile/kinesthetic preferences) for learning new materials and skills. (Brunner & Hill, 1992, p. 27)

Recent research is pointing to a more fluid approach to the notion of learning styles. A recent article reviewing the 2009 European Learning Styles Information Network International Forum discusses the changing ideas about learning styles that are being explored, noting that learning styles represent "an individual's preferred way of responding (cognitively and behaviourally) to learning tasks which change depending on the environment or context and are thus seen as malleable" (Peterson et al. 2009, p. 11). It is this more fluid approach to working with learning styles that has informed my discussions in the research findings.

Moving closer to how learning styles and teaching interconnect, Fuelscher, Ball and MacMahon (2012) explain how recent approaches to coaching are examining matching perceptual preference (or learning styles preferences in terms of preferred sensory modality) with an appropriate instructional method to enable coaches and students to communicate effectively with each other: Perceptual preference refers to an athlete's preferred sensory modality (e.g., verbal, visual) for receiving and attending to information in the environment. Given that athletes typically employ multiple senses during skilled performance, perceptual preferences can reasonably be expected to influence the learning process. A popular way of adapting this concept to coaching and instruction is to match perceptual preference and instructional method. These practices reflect more recent perspectives in sport, which acknowledge the role that individual difference variables (e.g., learning style) play for an effective communication process between coach and athlete (Reid et al., 2007). (Fuelscher et al., 2012).

Recent testing of learning styles at the Australian Institute of Sport (AIS) (2008) focused on coaching athletes using the four modalities of active/reflective, sensing/intuitive, visual/verbal and sequential/global. These are based on Richard Felder and Linda Silverman's learning styles system outlined in a key work in 1988, which Felder, in a 2002 preface to the article, later revised by omitting a fifth modality "deductive/inductive" and changing "visual/ auditory" to "visual/verbal". Although Felder acknowledged the importance of the "deductive/inductive" learning style category, he removed it because he did not want teachers to be biased towards traditional deductive teaching because of his research results that showed students' preferences were actually for traditional deductive style of instruction rather than inductive problem-based learning (Felder, 2002). I have, however, alluded to "deductive/inductive" learning and teaching styles in this project as I feel they apply in circus arts; for example, in relation to the sort of reasoning that takes place in creative practice where "inductive" learners work from the specific to the general to create new work, and "deductive" learners work from the general to the specific to do so.

It speaks volumes about the lack of teaching and learning style inventories geared specifically towards physical training and performance, that when the AIS—the national institute for the development of elite athletes in Australia—wanted to trial an approach on learning and teaching coaching styles they decided to base it on the system that Felder and Silverman developed in 1988 for teaching engineering undergraduates. Research supporting matching of teaching styles with learning styles (e.g. Dunn, 2009; Fleming & Bonwell, 2001)— that "implies that students and athletes learn best when both the teaching style and the learning style match" (Stevens-Smith & Cadorette, 2012, p. 360)—points to the need for a more specific learning and teaching style inventory to be created for sports and performing arts contexts.

2.7.2 Integrated learning and teaching styles.

Felder and Silverman (1988), and Grasha and Yarbanger-Hicks (2000) have both created integrated learning and teaching systems. Felder's teaching styles are linked to specific learning styles; for example, the perception-based learning styles of "sensory" and "intuitive" are matched to the corresponding teaching styles focused on "concrete" and "abstract" content; the input-based learning styles of "visual" and "verbal" are matched with teaching styles focused on "visual" and "verbal" presentation; the information processing-based learning styles of "active" and "reflective" are matched with teaching styles focused on "active" and "passive" student participation; the organisation of information-based learning styles of "inductive" and "deductive" matching teaching styles are focused on "inductive" and "deductive" presentation of information; and learning styles where students employ "sequential" and "global" understanding are matched with teaching approaches using "sequential" and "global" perspectives (Felder & Silverman, 1988, p. 675).

Grasha clusters together specific teaching styles that "reinforce" particular learning styles, such as "Expert", "Formal Authority", "Personal Model", "Facilitator", and "Delegator" (Grasha, 1994, Grasha & Yangarber-Hicks, 2000). How these teaching styles are clustered depends on the type of students being taught, and also the content being taught; however, Grasha gives an example of groupings of teaching styles and the type of learning styles reinforced by them in an article about integrating learning and teaching styles with instructional technology (2000), some of which used "flipped" instruction; that is, instruction that is web based with a "virtual" teacher presence. Coincidentally, this is of interest to the NCS as they are currently starting a web-based instructor program called Instructor E-Learning:

The National Circus School now offers an online version of the circus arts Instructor program in English. The program takes place over a period of 17 weeks. It consists of mostly virtual sessions along with a week of onsite training with National Circus School teachers in Montreal or another city depending on the session. (NCS, 2015)

Grasha & Yangarber-Hicks (2000, pp. 6-7) clusters the "expert" and "formal authority" teaching styles in the flipped classroom scenario as reinforcing "dependent", "participant" and "competitive" student learning styles; whereas in a guided coaching scenario the teaching styles of "personal model", "expert" and "formal authority"

reinforce "participant", "dependent" and "collaborative" learning styles; the "facilitator", "personal model" and "expert" teaching styles, in scenarios that involve activities encouraging active learning and interactions, reinforce "collaborative", "participant" and "independent" cooperative learning styles; and finally the "delegator", "collaborative" and "expert" teaching styles, in scenarios with advanced-level students where the teacher functions more as a "resource when needed", reinforce "independent", "collaborative" and "participant" student styles where students "shape and direct learning tasks" that mirror the "self-coaching" cognitive trigger exercises of Decision Training (Vickers, 2007, p. 168).

This research on learning and teaching styles has informed observations of, and discussions with, teachers and students, which I explore further in the next section about the background to the case studies, and in my discussion of the research cycles in Chapters 6–8. It has also had an influence on my findings in Chapter 9, directly informing one of the five research findings that emerged on learning and teaching styles and their relevance to the implementation of Decision Training.

2.8 Chapter Summary

In the first part of this chapter I investigated the theoretical and historical background of developments in physical education and sports psychology, and theories of motor learning and control that have informed cognitive approaches to physical training and Decision Training.

First, the origins of the physical education movement, from the European physical education movements of the nineteenth century, through the development of physical education in North America, to the rise of new academic specialisations of sport psychology and motor learning and motor control, were explored. This was discussed in the context of the so-called "cognitive revolution" in psychology in the 1960s, as a reaction to the behaviourist ideas of John Watson (1913), Edward Thorndike (1898), Clark Hull (1943), and BF Skinner (1953). I then moved to an exploration of the new models of motor learning and motor control that emerged out of the cognitive revolution and were concerned with new ways of thinking about acquisition of physical skills, which laid the specific theoretical foundations for Vickers' Decision Training model.

The foundations of Decision Training, from cognitive psychology, ecological psychology, dynamic systems, the constraints-led perspective and gaze control were

then reviewed. Finally, in the last section, selected studies that have tested Decision Training in various sports contexts were examined.

In the second part of this chapter I reviewed the learning and teaching styles literature that has informed the current research.

I now move to the action research methodology upon which the process of research in this project is based, beginning with a historical and theoretical background.

Chapter 3: The Research Methodology—Action Research

3.1 Chapter Introduction

This chapter discusses action research, putting it into a historical and theoretical context, and exploring how and why it has come to be widely used in qualitative research. In the second part of the chapter, the questions of why and how action research was applied to the NCS research project are explored.

Action research is described as a research *paradigm* "grounded in a participatory worldview" (Reason & Bradbury, 2006, p. 1). Guba and Lincoln (1994) describe a paradigm as a set of beliefs that:

represents a worldview that defines, for its holder, the nature of the "world," the individual's place in it, and the range of possible relationships to that world and its parts [...] The beliefs are basic in the sense that they must be accepted simply on faith (however well argued); there is no way to establish their ultimate truthfulness. (p. 107)

Thomas Kuhn, in *The structure of scientific revolutions* (1962), proposed that "normal scientific research takes place within a taken-for-granted framework which organizes all perception and thinking, which he called a paradigm" (Reason & Bradbury, 2006, p. 4). A paradigm can shift as it responds to new viewpoints that seem to "make better sense of the available knowledge" (p. 4). Kuhn's notion of a paradigm as a worldview that serves as a framework for the way in which one approaches being in the world has become widely accepted within qualitative research methodologies.

Action research is a research paradigm that incorporates a worldview that is inclusive, reflective and adaptable. It is a research paradigm that forms an umbrella for a number of different research approaches, some of which are investigated in the first part of this chapter.

3.2 Historical and Theoretical Background of Action Research

In this section, a specific lineage of literature about action research that is relevant to the NCS research project will be investigated. The development of action research from its early beginnings as an agent for social change to its current widespread use in the area of educational research is examined. As educator Graham Webb notes, "Action research is presently gaining widespread acceptance in educational and staff development practice" (Webb, 1992, p. 124). Richard Parsons and Kimberlee Brown, in their book *Teacher as reflective practitioner and action researcher* (2002), confirm not only the extensive reach of action research as a methodology in educational research but also its longevity:

Although action research is currently receiving a lot of attention among educators, it is far from a new or short-lived approach to professional practice. In fact, the concept of teacher as researcher was discussed in the 1920s (Buckingham, 1926). Further, the use of action research within the classroom has been in evidence since the early 1950s (Zeichner & Gore, 1995) [since when] action research has been on the rise (Casanova, 1989; Cochran-Smith & Lytle, 1990) and has been employed as an approach for facilitating educational changes within a classroom, throughout a school, and across [teaching] districts. (Parsons, 2002, pp. 4-5)

Action research, as a method of inquiry, is generally attributed to the social psychologist Kurt Lewin, who developed his theory of action research in the mid-1940s (Lewin 1947, Kemmis & McTaggart, 1988, 2014; Zuber-Skerritt, 1992; Holter, 1993). Lewin had fled from Nazi Germany to the US in 1933, and his early experiences of anti-Semitism as a Jew in Nazi Germany were a major influence in the development of his interest in democratically based approaches to participatory research.

Lewin contributed to changes in workplace behaviour through studies focused on encouraging manufacturing workers to make their own decisions on ways to increase productivity in their workplaces. Lewin, together with social psychologist Ron Lippitt, was at the forefront of research into human behaviour focusing on leadership styles, in which he studied school children who were put into authoritarian, democratic or *laissezfaire* groupings with results showing the effectiveness of democratic-based leadership styles (Lewin, 1948, pp. 71-83). Other studies involving Lewin focused on finding solutions to problems experienced by social workers in their practice (Lewin, 1947).

Lewin's work, along with that of Dewey (1938) and Piaget (1929), is cited by Kolb as directly informing his experiential learning theory (Kolb, 1984, p. 20), which was discussed in Chapter 2. Kolb's work went on to influence much of the subsequent learning and teaching styles theories (Grasha 1994; Felder, 1988; Reid 1987) that inform one of the themes of the research findings; namely, the influence of students' and teachers' backgrounds and learning and teaching styles on Decision Training. Kolb's experiential learning cycle of "concrete experience, reflective observation, abstract conceptualisation, and active experimentation" (1984, p.33) closely mirrors Lewin's social learning and problem-solving feedback loop of "concrete experience, observations and reflections, formation of abstract concepts and generalizations, testing of implications of concepts in new situations" (p. 21), which became the basis for action research.

Another key action research pioneer was John Collier (1945), who was a commissioner of American Indian affairs from 1933 to 1945. Collier used a collaborative research approach in improving race relations between Native Americans and whites, by having members from both communities participating in the process. For both Lewin and Collier, the "major goals of action research were to create a change in practice and to develop or refine existing theory. These goals have continued to be central characteristics of action research" (Holter, 1993, p. 299). It was primarily for this reason—to propose a change in teaching practice in circus arts training from its current dominant behaviourist approach—that action research was chosen as a methodology.

Some commentators also point to earlier origins of action research, showing "clearly and convincingly that action research is a root derivative of the scientific method reaching back to the Science in Education movement of the late nineteenth century" (McKernan, 1991, p. 8). Philosopher Olav Eikeland goes even further to suggest that action research's lineage can be traced back to Aristotle, pointing in particular to the philosophical link between action research and Aristotle's ideas of "phronesis" and "dialogue" (2008, p. 18). Commenting on Eikeland's discussion of "phronesis" in relation to action research, Donna Ladkin (2010) observes: "The term [phronesis] is generally translated into something along the lines of 'prudence', or 'practical wisdom', gleaned from the ability to reflect on practice (thus its relevance to action research)" (p. 444).

Implicit in this idea of "praxis" is "the interdependence and integration—not separation—of theory and practice, research and development, thought and action" (Zuber-Skerritt, 2001, p. 15). This interdependence between "phronesis" and "praxis"— of practical wisdom and practical doing—is central to the action research paradigm. The combining of theory and practice has become a characteristic of the action research method of inquiry, not just in emancipatory style social research but also in educational research. This is particularly applicable to the current research because habitually so much circus training is focused purely on physical repetition with very little time spent on "why" and "how" circus teachers teach the way they do. Introducing "reflection" and

"abstract conceptualisation" into the learning and teaching process provides a means to feed back into the process to create change. This loop of reflecting on practice, and then testing the "abstract concepts" or "theories" derived from discussion of practice, means that changes can be tested in the form of new actions in a "feed forward" process.

German sociologist and philosopher Jurgen Habermas, in his seminal work *Theory and practice*, first translated into English in 1971, defines the contemporary notion of "praxis" in terms of its emancipatory connotations: "praxis has been extended to cover stages of emancipation. For this rationale praxis is now interpreted as liberation from an externally imposed compulsion, just as the theory which is guided by this interest of liberation is interpreted as enlightenment" (Habermas, 1971, 1973, p. 253).

Hannah Arendt's theory of action revisions Aristotle's term "praxis" as "action", distinguishing between "praxis" - (action) and "poiesis" (making) (Arendt, 1958, p. 196). For Arendt, "praxis" is inherently political. For Brazilian educator and social advocate Paolo Freire "praxis" is transformative, a "reflection and action upon the world in order to transform it" (Freire, 1970, 1993, p. 51). For Freire, "praxis" and the pedagogy of "praxis" are seen as a means to enable people to rise above social oppression.

Freire argued for a new pedagogy where the learner co-creates knowledge with the teacher:

From the outset, [the humanist educator's] efforts must coincide with those of the students to engage in critical thinking and the quest for mutual humanization. His [sic] efforts must be imbued with a profound trust in people and their creative power. To achieve this, they must be partners of the students in their relations with them. (Freire, 1970, 1993, p. 73)

Freire had an enormous influence on the learner-centred, or student-centred, learning movement in education (Weimar, 2002, p. 9). Although in her book *Perception, cognition and decision training: The quiet eye in action* Vickers (2007) does not refer directly to learning and teaching styles or student-centred learning theory, as her focus is very much on motor learning theory, there is a great deal of studentcentred learning in Decision Training. In Decision Training the hallmark of studentcentred learning is evident in the way the teaching strategies aim to create a collaborative power relationship between student and teacher. For example, the emphasis in Decision Training on developing practice, feedback and instruction focused on cognitive skills that require students to make their own decisions is fundamentally part of student-centred (Weimar, 2002) and experiential learning (Kolb, 1984). This directly challenges the vertical hierarchy implicit in behaviourist teaching methods in gymnastics and circus—what Freire (1993) in his highly influential work on social education reform, *The pedagogy of the oppressed*, refers to in terms of vertical power relations between the "oppressor" and the "oppressed" (p. 48).

At the same time as Freire was writing *The pedagogy of the oppressed*, during the 1970s, educators were questioning the relevance of quantitative research methods in educational research, and promoting qualitative research practices such as action research as more appropriate forms of inquiry in the *social* context of education. Ernest Stringer, the Australian educator and a pioneer of contemporary action research practice, writes that the difference between quantitative research and qualitative research is that qualitative research deals with the "social" world:

Experimental and survey research (sometimes called quantitative research) is intended to provide generalizable explanations that provide the basis for predicting and controlling events and phenomena through rigorous application of numerically based hypothesis-testing procedures [...] although procedures for these types of investigations have been highly successful in predicting and controlling phenomena in the physical world, they are more problematic in the social world. Research in the social world requires quite a different set of assumptions and procedures. (Stringer, 2014, p. 6)

In the 1970s, in England, the humanistic education movement, sometimes known as person-centred education, was gaining momentum and building a case for educational reform:

Humanistic approaches to learning and change led to experiments with learning communities based in humanistic education [after the work of psychologists such as Abraham Maslow and Carl Rogers, which focused on student-centred learning and empathetic teaching practices] which directly informed the development of co-operative inquiry. (Reason & Bradbury, 2006)

Psychologist John Heron developed cooperative inquiry as a form of action research in 1971: "Co-operative inquiry is a form of participative, person-centred inquiry which does research *with* people not *on* them or *about* them. It breaks down the old paradigm separation between the roles of researcher and subject" (Heron, 1996, p. 19). This description of action research conveys the approach that informed this research project at the NCS. The teaching strategies and the content of the Decision Training plans were cooperatively created in discussion with the teachers. In discussion of the effects of the teaching strategies employed, participation was extended to include observation, reflection and discussion with all the participants in the research project.

In their description of cooperative inquiry, Heron and his co-researcher, psychologist Peter Reason, mention the transition from the propositional to the practical that is central to the research process of cooperative inquiry: "The emphasis, with regard to research outcomes, shifts from the traditional emphasis on propositional knowledge [empirical scientific knowing] and the written word to practical knowledge and the manifest deed" (Heron & Reason, 2006, p. 149). This speaks to the objective of this project in creating practical proposals that can be applied in the local situation of the NCS.

By the 1980s, the potential of action research for "bridging the gap between theory, research and practice, and incorporating both humanistic and naturalistic scientific methods" (Holter, 1993, p. 299) was beginning to be seen by a growing number of researchers as a valid and appropriate new paradigm capable of bringing about radical social transformation, particularly in the area of education. The use of action research in education addressed the lack of critical theory underpinning research in education, "Of recent attempts to develop theoretical frameworks for academic development, action research has probably had the greatest number of advocates" (Kember, 2000, p. 213).

Researchers in the area of school-based action research projects focused on developing curriculum equity. These extensive research projects include those carried out by philosopher Wilfred Carr in the UK, and educators Stephen Kemmis and Robin McTaggart in Australia (Kemmis & McTaggart, 1988, 2014).

In their book *Becoming critical: Education, knowledge and action research* (1986), Carr and Kemmis introduced a critical theory approach to action research, and Kemmis and McTaggart went on to develop this critical action research approach into a model that is now widely used in social and educational research.

Critical action research theorists point out that the cyclic interaction of reflection and action that is the basis of action research provides "the kind of self-reflective understanding that will permit individuals to explain why the conditions under which they operate are frustrating and will suggest the sort of action that is required if the sources of these frustrations are to be eliminated" (Carr & Kemmis, 1986, p. 136). Although sometimes criticised as overly polemical, Arendt's, Habermas's and Freire's ideas about "praxis" as political, emancipatory, action-based and dialogic, are pertinent for action research in education where teaching can be framed as a social, cultural and political action. Although the cognitive teaching strategies applicable to the circus arts form the focus of interest in this thesis, it is undeniable that the action of teaching these circus skills is still based on human interaction, and mediated by social, cultural and political constraints.

Major figures in educational research, including Jack Whitehead and John Elliot in the UK, have done much to promote the acceptance of action research as a valid means of research in the field of education by proposing that teachers themselves are capable of improving their own teaching practices and generating knowledge through self-analysis. Whitehead writes:

Instead of thinking of an educational theory in terms of a set of propositional relationships between linguistic concepts, I am proposing a view of educational theory as a dynamic and living form whose content changes with the developing public conversations of those involved in its creation. (Whitehead, 1989, p. 47)

Learning theorists Chris Argyris' and Donald Schon's (1974) work on the relationship between theory and action has also influenced action research in drawing attention to the idea of their notion of "theories of action":

Espoused theories of action are those that people report as a basis for actions. Theories-in-use are the theories of action inferred from how people actually behave (taken from video or audio tapes, or other instruments that focus on collecting relatively directly observable behavior). (Argyris & Schon, 1974, p. 367)

Argyris and Schon argued that it is these mental maps (theories in use) that guide a person's actions rather than the theories they publically espouse, and that few people are aware of maps or theories that they, in reality, habitually use (Argyris & Schon, 1974, p. 367). They also introduced a key action research concept, double-loop learning, in contrast to what they define as single-loop learning. In the single-loop learning model, an individual or group of individuals working on a problem proceed from the results and consequences of an action (*what we obtain*) straight back to the action strategy (*what we do*). In contrast, double-loop learning proceeds from the results and consequences of action back to the *governing variables*—the values and beliefs that inform the action strategy (*why we do what we do*). Reflection, in other words, can be used to reveal the theory in use, through the process of questioning the governing variables informing actions (Argyris, 1976).

In recent years, action research has begun be used as a methodology for practicebased research in high-level sport. One example is a collaborative action study "Coach development through collaborative action research: An Australian football coach's implementation of a Game Sense approach" by Australian physical educator, Shane Pill. The study "reports the forces driving and shaping a coach's adoption of Game Sense as a new and innovative practice program emerging from an appreciative inquiry action research project" (Pill, 2014, p. 31). The term "appreciative inquiry" refers to an action research framework devised by David Cooperrider (2003), which takes a positive approach to problem solving in research, examining which things are working, and building on them.

Moving closer to the use of qualitative methodologies, such as the use of action research in the NCS project, kinesiologist, Krista Munroe-Chandler claims that sport psychology researchers:

have used qualitative methodologies in an attempt to gain a greater understanding of the subjective experience of the athletes (e.g., Gould, Eklund, & Jackson, 1992; Munroe, Giacobbi, Hall, & Weinberg, 2000; Scanlan, Stein, & Ravizza, 1989). Because of these studies, several researchers have published review articles or discussion papers outlining the use (or misuse) of qualitative research in the field (e.g., Dale, 1996; Krane, et al., 1997; Sparkes, 1998; Strean & Roberts, 1992). These sport specific qualitative studies have provided indepth analyses of athletes' and coaches' experiences that might have gone otherwise untapped. (Munroe-Chandler, 2005, pp. 67-68)

3.3 Why and How Action Research was used for the Decision Training Project at the National Circus School

In relation to the research project at the NCS, the long observation period, which lasted for a total of 16 weeks, allowed for an in-depth appreciation of the lived experience of students and teachers, and the extensive open-ended interview and discussion process allowed for an understanding of each participant's subjective experience of Decision Training.

As has been discussed, action research has been used extensively in the area of education, and is starting to be used in the area of physical training. The use of action

research in this project might initially appear to be an unusual choice in that the project brought together a training system that had emerged from sports science and predominantly quantitative field studies, with a research methodology normally associated with a qualitative style of social and education research. However, Decision Training itself has an underlying constructivist student-centred philosophy that aligns itself with action research.

Guba and Lincoln see action research located within the different "competing paradigms of inquiry" (Heron & Reason, 1997, p. 274), which they break down into four categories: positivist, post-positivist, critical theory and constructivist. Within this mode of categorising research paradigms of inquiry, action research aligns itself with a constructivist paradigm with its emphasis on interpreting the *experience* of research participants and the construction of induced or *grounded* theory that emerges from data produced by the research process (Guba & Lincoln, 1994, p.112). This positioning of action research contrasts with traditional empirical research, which is more aligned to a positivist paradigm wherein a distinct separation between the *researcher* and the *researched* is maintained. This separation is identified by sociologists John Gaventa and Andrea Cornwell as having the potential to create a "dislocation of knowledge from the agents and contexts of its production" (Gaventa & Cornwell, 2001, p. 75).

Educator Richard Schmuck categorises four main differences between action research and traditional research methodologies:

The first is improvement versus explanation. Action research concerns a search for continuous improvement. Traditional research concerns a search for explanation. Second is *development* versus *knowledge*. Action research seeks to foster development and planned change. Traditional research seeks to build a body of accumulated knowledge. Third is *perspectives* versus *experimentation*. Action research aims to collect trustworthy data on the multiple perspectives of particular individuals and groups. Traditional research aims to obtain objective data from a representative sample of subjects. Fourth is *local* versus *universal*. Action research focuses on local change and improvement. Traditional research focuses on building universal theory and valid generalizations. (Schmuck, 2009, p. 1)

The appeal of action research in the current project is that it opens up the *process* of research to the participants so they are not passive subjects. This approach parallels the way that a cognitive-based training system, such as Decision Training,

strives to activate the self-regulatory and self-efficacy skills of the learner, and encourage the learner to be involved actively in the learning so that they are active participants in the learning process. In this way, there is a synergy between the approaches of Decision Training and action research.

It is the participatory nature of the roles played by researchers and participants in action research methodology that made it a suitable mode of inquiry for this thesis. The action researcher works as a practitioner–researcher, collaborating with the participants, allowing participants to help guide the agenda and responding to changes in the process, as opposed to the traditional scientific view of the researcher dictating the parameters of an experiment and observing participants at an objective and neutral distance.

Action research was chosen as a methodology for the NCS project because the research aim was to look at the "lived experience" for teachers and students, to see the effect of the application of Decision Training in a specific local learning environment, and to examine these experiences for what they revealed about how teachers and students were affected by the process. The Brazilian educator Moacir Gadotti (1996) writes how in the dialectical philosophy of education put forward by Freire and others, the lived experience of teachers and students underpins any attempt at improving practice: "the practice is the horizon, the aim of the theory. Therefore the educationalist lives the instigating dialectic between his or her daily life—the *lived* school and the *projected* school—which attempts to inspire a new school" (p. 7). It was the interest in this "lived experience" that played a major factor in informing the research findings of this project.

Although there are several models for the structure of an action research project, they all involve a common focus—that action research is "a method used for improving practice" (Koshy, 2010, p. 1). Valsa Koshy (2010) also reviews other common elements of action research:

Action research is participative and collaborative; it is undertaken by individuals with a common purpose. It is situation-based and context specific. It develops reflection based on interpretations made by the participants. Knowledge is created through action and at the point of application. Action research can involve problem solving, if the solution to the problem leads to the improvement of practice. In action research findings will emerge as action develops, but these are not conclusive or absolute. (p. 1)

Stringer (2014), summarises this approach in the form of a question that researchers and participants ask collectively: "What is happening now?" Then, through a process of observation, interviews and reflection, the question is asked: "How can we make what is happening now better?" This in turn prompts the planning of a new action. This process was used in the NCS project. Each cycle was structured as follows:

Planning—"What can we do to make what is happening now better? What teaching intervention shall we make to the teaching practice? How will we capture the data?"

Action—implementing the teaching intervention

Observation—observing and documenting the teaching intervention Reflection/Discussion—"What is happening now?" Analysis of the outcomes moving on to revising the existing plan, and planning the new teaching intervention for the next action–reflection cycle.

Another reason why action research was an ideal methodology for the NCS project is its emphasis on practice-based research. John Heron and Peter Reason discuss action research's "extended epistemology" in which "practical know-how" is of primary importance in "consummating" three forms of knowing—experiential, presentational and propositional—that extend "beyond theory and academia" (Heron & Reason, 2001, p. 183). The relevance of the importance placed on "practice-based knowledge" in action research meant that it allowed me to bring my extensive practical experience—based on my having developed a training model for circus arts with my own company and school, and my work teaching dance and related physical disciplines at the WAAPA—to the NCS project, and to take on an active role in the studio, as and when time constraints allowed, and also take an active role in the discussions with all the participants. Also, using the action research methodology in the NCS project allows for real-world practical applications of the research findings to have the potential to be implemented into the practice of teachers at the school.

To summarise, the reasons for using action research as the methodology in the project are:

 Action research presented a synergy with the central elements of the Decision Training model, being non-linear, participant centred, self-reflective and practice oriented.

- It enabled research to take place into the lived experience of the research participants and provided a research process able to adapt to the needs of all the participants *as* it proceeded.
- It provided a research strategy that allowed the teachers to be actively involved in cycles of action and reflection; to be able to provide input into adapting the research process in response to issues raised in each cycle.
- It enabled everyone involved in the project to adapt to a new training method that had not previously been experienced in a formal way, so participants were able to learn and adapt as the project developed.
- Action research offered a collaborative research process in which all the
 participants had a level of agency. The aim of the research was not to present
 Decision Training as a "better" system than the habitual teaching practices of
 participating teachers, but rather to explore the notion that Decision Training
 might prove to be a system that could *enhance* existing practice, and, where
 appropriate and applicable, might even have the potential to transform some
 aspects of existing practice.
- The action research process enabled all the people engaged in the project to feed their own ideas into the process, be listened to and initiate change, and therefore to be contributing participants in the generation of new knowledge.
- The emphasis of action research is on research at a local scale, taking place in a specific locale with potential research outcomes of benefit to a specific community. This was the focus of the research at the NCS.
- The focus on a praxis of practice and research in the methodology meant that all the interventions would be implemented and observed *in situ* in the training studio, leaving open the possibility for practical research outcomes to emerge that would be directly applicable to the local learning and teaching community at the NCS.

The aim of the NCS project was to observe teachers' interventions and the learning behaviour of students as a result of the teaching interventions. Therefore, it is important to note that students were not actively involved in the action research process in the same way as were teachers. Technically, there were two levels of participant agency: one for teachers who were able to affect change in the direction of the research and in the choice of research interventions; and another level for students who were not informed of what research interventions were being tested, and were not able to directly affect change in the direction of the research and the choice of research interventions. In line with ethics protocols, these two approaches—one for the teachers and a different one for the students, which both would run concurrently—were discussed with all participants at the start of the recruitment and ethics process. The inherent flexibility of the action research structure allowed for an adaptable approach to respond to these research processes and objectives while striving to ensure the wellbeing of the research participants themselves.

3.4 Chapter Summary

In this chapter, I have discussed the theoretical and historical background of action research, and how and why it has been used as the research methodology for this thesis.

I began with putting action research into a historical and theoretical context, from Aristotle with the idea of "praxis", or "the interdependence and integration—not separation—of theory and practice, research and development, thought and action" (Zuber-Skerritt, 2001, p. 15). I reviewed how the process is used in qualitative research, beginning with its origins as a research methodology with the work of Lewin (1948), Collier (1945), Dewey (1938) and Piaget (1929), whose work also directly informed Kolb's experiential learning theory (Kolb, 1984, p. 20), which in turn gave rise to the learning and teaching styles theories that inform some of the research findings in this project. I then discussed the development of action research through the second part of the twentieth century with the work of Arendt (1958), Freire (1970) and Habermas (1971) through to the critical action research of Kemmis, Carr and McTaggart (Carr & Kemmis, 1986; Kemmis & McTaggart, 1988).

In the second part of the chapter, why and how action research was applied to the NCS research project was discussed. I reviewed the cycle of action, observation, reflection and planning that informs the action research process, and Stringer's (2014) action research question, "What can we do to make what is happening now better?" was introduced as a key research catalyst for this project.

The next chapter is about Decision Training and provides a detailed breakdown of the model and how it is applied in practice.

Chapter 4: The Decision Training Model

4.1 Introduction to the Decision Training Model

The theoretical and practice-based foundations of Decision Training have been investigated in the literature review; this chapter will now move on to break down the actual process of the Decision Training model itself:

Joan Vickers' writes a description of the Decision Training model, stating that: At the heart of Decision Training is an extensive research base that, when applied to coaching, leads to a change in the coach's behavior. This, in turn, creates practice environments where athletes learn to make decisions under conditions very like those experienced in competition. Instead of leaving the critical decision-making skills to the unpredictable events of competition, Decision Training moves this aspect of athlete preparation overtly into the daily practice setting [...] The underlying assumption is that effective decisions can be trained within the practice environment in much the same way as technical and tactical skills are developed. (2007, p. 162)

Vickers adds that when Decision Training is adopted by coaches and athletes there are improvements not only in athletic performance, but also in training practice itself through the involvement of athletes in the actual process of how practices are run (p. 162).

In developing the Decision Training model, Vickers' emphasis was on the practical application of teaching strategies to create effective training environments by designing teaching tools that could be understood, and used, by teachers to develop better and longer-lasting performance outcomes for students.

Having seen that behavioural teaching practices actually inhibit retention of skills, and therefore, ultimately, the long-term performance of athletes, Vickers put a strong emphasis on developing Decision Training teaching tools that can train particular cognitive skills central to the successful application of motor actions in the complexity of a performance situation in which the athlete will be under stress, and will need to make the correct decisions from one moment to the next.

As Chambers and Vickers (2006) put it:

Decision Training is a coaching model that focuses on increasing athlete cognitive effort, self-direction, and decision-making within the practice environment through enhanced cognitive training (DT; Vickers et al., 1996a,

1996b, 1996c; Vickers et al.,1999a; Vickers, 1999, 2000a, 2003a; Vickers et al., 2004b). It differs from motor learning in that learning is not inferred solely from changes in behavior but also "when there is evidence that the performer is able to think and make effective decisions while physically performing" (Vickers et al., 2004b, p. 103). (p. 185)

In studies of sports-based applications of Decision Training conducted by Vickers and her co-researchers, it was shown how training that used "variable practice" and "random practice", delayed and reduced feedback, and "top-down tactically oriented instruction" (Vickers, 2003)—all features of Decision Training—produced a higher level of success when the acquired skills were tested in a performance context such as a competition. "Top-down" in this motor learning context is not to be confused with the notion of "top-down" instruction in behaviourist education, which refers to the hierarchical position of the teacher in relation to the student. In this motor learning context, "top-down" teaching refers to the idea that the performance context of a skill needs to be comprehended before the component parts of that skill can be fully understood and learnt. Vickers refers to this as "whole training" as opposed to the linear progressions used in traditional behavioural practice design, which move from simple to complex skills in "bottom-up" training.

The underlying basis of the Decision Training approach to sports coaching, therefore, is to create a training environment where the student is trained to respond to the same sort of decision-making situations to which they would be exposed in the competition environment. A game of tennis, for example, is composed of many events to which the student is trained to respond. However, the environment of a tennis match is by nature unstable, and the flow or unfolding of the events that the student responds to is more like a structured improvisation. Although a circus performance appears initially to be more stable than a game situation—in that the events have been choreographed, rigorously practiced and rehearsed to take place in a specific order, time frame and spatial orientation—there is a great potential for changes to occur in the performance environment. Many circus environments, including training, performance and creation are, in fact, inherently unstable. This was evident in the circus activities involved in each of the three case studies, namely diabolo juggling, trampolining and dance trapeze, which are all disciplines that have random and variable elements inherent in their performance. This is because the throw of a diabolo, even if only minutely altered, will create a different angle for the catch in juggling; the slightest change in

position of the head on the take-off into an acrobatic trick can change the trajectory of the jump; and in dance trapeze, the apparatus itself is inherently unstable as the trapeze is fixed to just one point so the apparatus turns and rotates in an unpredictable fashion as the acrobat is on it or intercepts it.

This discussion of Decision Training now moves onto an investigation into how the component parts of the three-step Decision Training model work.



4.2 The Three-step Decision Training Process

Figure 5. 3 Step Decision Training model.

In creating an accessible hands-on teaching method for Decision Training Vickers put together a 3 Step teaching process (see *Figure 5*) that allows the teacher or coach to:

- Step 1: identify a specific cognitive ability (decision) to be trained
- Step 2: design, or select a series of drills or exercises to help train the identified cognitive skill (decision) in a performance-relevant situation
- Step 3: use a set of specific teaching strategies or tools to enable the whole process of training the cognitive skill (decision).

In **Step 1** of the Decision Training model, the teacher identifies a cognitive skill to be developed from seven cognitive abilities identified by Vickers:

- Anticipation: to predict and prepare for events that will occur during performance. "Before performing, what information must be seen, felt, heard, or otherwise perceived or attended to before acting?" (Vickers, 2007, p. 166)
- Attention: to select the relevant information from information available before and during performance of an action. "What information must be attended to during the performance of a specific skill or tactic?" (p. 166)
- Focus and concentration: to "detect the correct cues and not be distracted by irrelevant events over an extended period of time" (p.166).
- **Pattern recognition:** to "discern meaningful information while moving through complex environments" (p.166).
- **Memory retrieval**: the ability to choose the best of the learnt solutions held in memory. "What information must be retrieved?" and "How long will it take to do so?" (Vickers, p.166)
- **Problem solving:** the use of perception attention and other cognitive abilities to come up with solutions to problems in known and new situations.
- **Decision making:** to make the best choice when confronted with a set of alternatives. This ability "draws on all the other perceptual and cognitive skills" (p.167).

In **Step 2** of the Decision Training method, an exercise or drill is designed to address the cognitive skill that the teacher has identified as needing work. These exercises are:

- **Object cues:** to anticipate or focus the attention on a specific object and to identify it while performing. "These cues function as cognitive triggers the coach can use to see if the athlete is able to detect the cue and use it before performing" (p.168).
- Location cues: to anticipate or focus the attention on a location, or target area.
 "Gaze locations function as cognitive triggers when athletes have to verbalize or otherwise indicate if they have perceived the cue before executing the skill" (p.168).
- Quiet eye cues: to make "a final fixation or tracking gaze that is located on a specific location or object" (p. 11).
- **Memory cues:** to retrieve a specific solution learnt from training with speed and accuracy. "Memory-retrieval cues can be trained by asking the athlete to place one skill (which is named) in memory and to hold in memory another skill or
skills that may or may not be retrieved by a cue from the coach to switch skills" (p. 168).

- **Reaction time cues**: to switch between skills that are held in their memory within time constraints. "These cues are triggered by a coach's command, external stimuli such as the opponent's movement, or another signal" (p.168).
- **Kinaesthetic cues:** to focus the attention on a "particular feeling for a position, technique, or temporal event" (p.168).
- Self-coaching cues: these prompt the student to make their own decisions about how to train and how to overcome difficulties in their training plans.

In **Step 3**, the teacher uses one or a combination of seven Decision Training tools to "train the decision identified in step 1 within the context of step 2" in the context of "practice design, feedback, and instruction" (p.167-168):

- Variable practice: Variable practice (or smart variations), as defined in the sports psychology context, is the practice of variations of a single class of skills in a competition-like setting. A single class of skills has the same biomechanical characteristics, but the athlete needs to master these in the context of variations found in a competition. In a circus arts context, examples of the use of variable practice would be the teacher asking the student to perform a movement faster, slower or with a different artistic quality, or to change the position of a movement within a sequence of movements.
- **Random practice:** In the sports training environment, random practice (or smart combinations) is when the athlete is trained to practice different classes of skills with different biomechanics so they will be able to react to the random events that occur in competition. In a circus arts context, an example of this would be the use of improvisation tasks in training and in performance.
- **Bandwidth feedback:** Bandwidth feedback employs reduced and delayed feedback as the skill of the athlete improves: "When bandwidth feedback is used, the athlete has a chance to function more and more in an independent way, free from constant external guidance and correction provided by the teacher, coach, parents, peers, or others involved in the athlete's training" (p.196). As the name implies, the coach identifies a band of acceptable performance in which they will respond with less direct feedback as the athlete moves closer to the desired target performance. This trains the student to turn to their own powers of self-assessment to make corrections.

- **Questioning:** As feedback is reduced, the frequency of questioning is increased. This can improve intrinsic awareness and communication between athlete and coach.
- Video feedback: A tool where athletes review their performance on video and develop self-analysis skills.
- Hard-first instruction and modelling: In "hard-first instruction", coaches introduce high-level skills early on in training and teach them at the same time as basic skills. Modelling is where the athlete looks at another performer's actions to learn about technical and tactical skills. In a circus arts context, an example of "hard first" instruction might be to introduce performing contexts in front of an audience early on in the training experience, and an example of modelling might be the training of students with different levels of ability in the same class, sometimes doing the same exercises.
- **External focus of instruction:** This form of instruction directs the student to focus on the outcome of actions instead of towards the physical production of the actions. In a circus arts context, this may be to draw the attention of a student to the different artistic qualities of performance and their reception by an audience.

4.3 Chapter Summary

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This chapter has provided a breakdown of the Decision Training model, beginning with a discussion of its practical application to sports coaching teaching (Vickers, 2007). The accessible and practical nature of Decision Training was discussed, and how it not only improves athletic performance, but, by allowing athletes to be involved in the actual training process itself, it also increases the athlete's cognitive effort, self-regulation and decision-making skills.

The three-step process of decision/cognitive skill; cognitive trigger; and teaching tools, was detailed, and the function of each element in the Decision Training model was discussed:

 the Step 1 cognitive skill to be developed from the cognitive abilities of "anticipation", "attention", "focus and concentration", "pattern recognition", "memory", "problem solving" and "decision making"

- the Step 2 exercise or drill focused on the cognitive skill selected by the teacher; that is, "object", "location", "quiet eye", "memory" retrieval, "reaction time", "kinaesthetic" and "self-coaching" cues
- the Step 3 selection of one or a combination of the Decision Training tools to "train the decision identified in step 1 within the context of step 2" (Vickers, 2007, p.167-168); namely, "variable practice" and "random practice" design;
 "bandwidth feedback", "questioning" and "video feedback"; and "hard first" instruction, "modelling" and "external focus of instruction".

The next section of this thesis moves on to the actual research project itself, starting with a chapter discussing the research process from recruitment and ethics, through the action research cycles, and on to data collection methods and analysis.

Chapter 5: The Research Process

5.1 Chapter Introduction

In this chapter, the research process is discussed through a breakdown of the whole process from recruitment; ethics; observations, interviews and focus group meetings; the process of the action research cycles; data collection methods and data analysis.

5.2 Recruitment, Communication and Ethics

Three student-teacher pairs were recruited for this project. Purposive sampling was employed to reflect the diversity of students and the range of teaching practices at the NCS. Students in their first year at the NCS were selected to make sure that they had had no prior learning experience at the NCS, and thus had no specific expectations as to learning or teaching methods or practices.

As Decision Training was a different approach to the normal mode of circus arts teaching at the NCS, restricting the trial to first year students had the benefit, from an ethical point of view, of minimising any potential detrimental effect of the project on a student's graduation act. For example, given the research that shows using certain Decision Training methods, such as "bandwidth feedback", are not as effective in the short term as the more traditionally used, immediate high-volume feedback (Vickers, 2007, p.197), introducing a Decision Training experiment into the third year could potentially have affected the normal timing of a student's progression through the year, which culminates in their graduation *épreuve synthèse* act.

The case study student-teacher pairings were selected through an examination of schedules, and a process of working out which combination of student-teacher pairings could be observed for two hours each week. There was a need to ensure there was a diverse range of students and teachers, and that no student had been to the school before, for example, by attending the school's high school program prior to attending the tertiary program. The range of students who were finally selected is indicative of the diversity of practice in the student cohort at the NCS.

• **Team 1 teacher:** Teaching the juggling student, an early career male teacher coming from a combination of backgrounds in juggling (self-taught, non-elite level) and sports science.

- **Team 1 student**: A male juggling student with an elite level of skill in his discipline in diabolo (a juggling apparatus), who was self-taught from an early age and had trained in circus schools in Europe.
- **Team 2 teacher:** Teaching the student learning trampoline, a highly experienced male teacher with a background as a circus performer, and an accredited gymnastics coach with some prior exposure to Decision Training teaching methods.
- **Team 2 student:** A male student coming into a new discipline (trampolining) but who already possessed high-level transferable acrobatic skills. This student had been trained in a social circus program in the US and had developed his acrobatics skills originally through street acrobatics.
- **Team 3 teacher:** Teaching the student learning dance trapeze, a highly experienced teacher who had herself been an elite performer.
- **Team 3 student:** A female student coming to a new discipline (dance trapeze) with no circus or acrobatic background but with a background in dance and some training in rhythmic gymnastics.

After finalising the details of the research schedule and the case study participants, the process of orientation meetings was begun. In these orientation meetings, the teachers were involved in discussions mostly as a group, but sometimes separately depending on their availability. Each student attended orientation meetings individually. The objective of the orientation meetings with the teachers was to know if they were already using, or were familiar with, Decision Training practices either formally or intuitively. I also had some prior knowledge of each teacher's teaching style and background based on my informal observations of training at the NCS.

In the orientation meetings with the students, it was explained that what was of interest was the observation of their learning behaviour as a result of teaching interventions introduced through the research, and their perceptions of these teaching interventions without prior knowledge of the specific teaching strategies being introduced into class. Care was taken to ensure that the students were fully aware of the research process, including why certain information was being made accessible to them, and why other information was not being made accessible to them.

A detailed set of protocols was prepared and agreed between all parties based on guidelines contained in the Australian National Statement on Ethical Conduct in Human Research, the Australian Code for Conducting Responsible Research, the ECU Policy for the Conduct of Ethical Human Research and the NCS's Ethics Committee's Statement for Ethical Conduct in Human Research. (See Appendices for sample of letter of agreement with research participants).

These protocols covered ethics-related issues including assurances regarding the collaborative nature of the research process; the ability of all participants to withdraw voluntarily if any effects from the research adversely affected them; confidentiality of information and identity; risk prevention measures; protocols for withdrawing from the project; consent for audio-visual recording; processes of consent for research papers and presentations connected with the project; and availability of research findings to participating organisations and participants.

After orientation had been completed and ethics protocols agreed upon by all the participants and parties concerned, the first observation–reflection–action cycle commenced.

5.3 Overview of the Research Process

The case studies for this research took place from November 2011 to April 2012 at the NCS. The project involved three, five- to six-week research cycles in which teachers applying Decision Training interventions with their students were observed for an average of two hours a week each. Decision Training interventions were implemented, observed and discussed. This resulted in 60 hours of observations, 11 hours of interviews (with teachers and students separately) and four hours of focus group meetings (with teachers together).

The research process was conducted in the following way. In the first action research cycle, the participants were introduced to the seven Decision Training tools ("variable practice" and "random practice" design; "bandwidth", "questioning" and "video" feedback delivery; and "hard-first instruction with modelling" and "external focus of instruction"), as described in Step 3 of Vickers' model (see Chapter 4). At the end of this first action research cycle, each teacher was asked to assess their student's cognitive weaknesses in relation to their learning and training behaviour. Then, by engaging with Step 1 of the Decision Training model, the teachers were encouraged to identify specific cognitive skills—or what Vickers calls "decisions" (Vickers, 2007, p. 170)—that they wanted to train in the student.

In the following action research cycles, the teachers then engaged with Step 2 and Step 3 of the Decision Training process, by choosing specific exercises to trigger the activation of the selected cognitive skill(s), and by choosing a Decision Training tool (or a combination of tools) as teaching strategies to improve the selected cognitive skill to be developed. Through observations, video recordings, interviews and focus group meetings, the lived experience of the research participants was investigated in relation to two central questions:

- "What is happening now?" This question became the driver for reflecting on data that emerged through observations and discussions. This formed the reflection part of each reflection–action research cycle.
- "How can we make what is happening now better?" This question initiated the action part of each reflection-action research cycle in which the teachers' Decision Training interventions were planned and implemented.

In this way, a feed forward action research process, which was adaptive and responsive, was built up that was able to capitalise on the dynamic relationship between data collection and data analysis, and its application in each reflection–action cycle.

Data analysis revealed insights into how the use of Decision Training affected the lived experience of teachers and students in the project.

5.4 Observations, Interviews and Focus Group Meetings

In action research, great care is taken to observe, ask questions and reflect on the lived experience of the participants. Using the action research process allowed me to observe and reflect on observations of Decision Training interventions in training during each action research cycle. At the beginning and end of each action research cycle, interviews were conducted with students and teachers separately, and focus group meetings were also held with all the teachers. The objective of these interviews and of the focus group meetings was to gain an understanding of each teacher's, and each student's, experience of the Decision Training interventions during training in class, assessment periods when they were preparing their acts to be performed, and in their assessment performances. Another objective was to determine how each of the participants was dealing with being in the research project itself, and to confirm that they were still happy to participate and go forward into the next research cycle. Discussions at the end of each research cycle based on observations and interviews were conducted in focus group meetings with teachers, with myself, Sylvain Lafortune and Patrice Aubertin in attendance.

In their individual interviews, teachers were asked open-ended questions about their experiences with regard to the implementation of Decision Training interventions, and their perceptions of their student's responses to these interventions.

In their individual interviews, students were asked about their experiences with regard to their perceptions of their teacher's strategies, and their own learning experience when Decision Training interventions were applied in class.

The interview questions were also informed by extended periods of observation of teaching interventions, and the learning behaviour in response to these interventions in a practice-based situation. Over long periods of observation I was able to record the ups and downs, successes and failures, moments of crisis and catharsis, and the subtle modifications that were made to the Decision Training tools in the actual practice situation.

I would suggest, therefore, that conducting the research over this long period, which consisted of most of the training year, provided a more nuanced holistic picture of participants' experiences than would have been the case using the normally shorter, quantitative-style research time frame.

The interview questions were constructed to try to better understand specific issues in the learning and teaching behaviour that was observed, and to reveal a coherent picture of the lived experience of participants. Sometimes interviews and meetings comprised open-ended discussions (What is happening now?); other times they were more guided (for example with the teachers: What can we do to make this specific issue better?).

Teachers reflected on research actions and planned interventions in focus group meetings and in individual interviews. Each of the students was interviewed individually. As the focus of the research was on the effects of specific teaching interventions, the methodology diverged from being the completely collaborative model of action research, in that the students were not made aware of which specific Decision Training interventions were taking place. They were also specifically asked not to discuss details of the class with the other students in the project so that prior knowledge would not affect their responses to the interventions in class.

Stringer (1999) outlines action research questioning techniques such as "global question[s] [...] to enable participants to describe the situation in their own terms. They take the form, 'Tell me about [your work]' and provide focus without giving direction or suggesting types or forms of responses" (Stringer, 1999, p. 69). Stringer also talks

about the difference between "typical" questions, which ask the participant to describe their typical practice, and "specific" questions that ask the participant to describe a specific event in their own terms. Three other forms of questioning that Stringer identifies were also used to encourage the participants to extend their descriptions: "Extension questions (e.g., 'Tell me more about ...', 'Is there anything else you can tell me about ...?', 'What else can you tell me about?'). Encouragement comments or questions (e.g., 'Go on.' 'Yes?' 'Uh huh?'). Example questions (e.g., 'Can you give me an example of that?')" (Stringer, 1999, p. 70).

Discussing qualitative research, Bloor and Wood point out the context-bound nature of the interview process:

Constructivists and postmodernists alike have pointed to the context-bound character of all interviews, that the interview is a setting in which interviewer and interviewee collaborate to produce a context-bound description of a social world: the interviewer does not elicit a description of the interviewee's social world, rather the interviewer actively contrives to produce that description with the interviewee. (Bloor & Wood, 2006, p. 105)

There were some language issues that affected communication not only in the class situation between teacher and student, but also in the interview and discussion process. For example, as one of the teachers (Teacher 3) was a Russian and French speaker and spoke only a small amount of English, she was interviewed in French by Dr Lafortune, who then translated the interviews into English. The other two teachers and one of the students were also native French speakers, but these participants were comfortable being interviewed in English.

Transcripts of interviews from the project that are quoted in this thesis have been included in the appendices. The quotes appear in a form that is not completely verbatim but has had extraneous utterances such as "um" and "err" omitted for the sake of clarity; also, because some of the French speakers were using English as their second language, I have added in square brackets certain words to add clarity. If an interviewee has mentioned a research participant by name I have replaced the name with a descriptor, in line with confidentiality protocols. I have included in round brackets my own comments elaborating on what is being said to make the meaning clearer to the reader. A code, for example (DBT 101), will appear at the end of each quote and this refers to the transcript from which the quote was taken.

5.5 The Process of Action Research Cycles

5.5.1 First research cycle.

At the beginning of the first research cycle, the teachers were familiarised with the basic principles of Decision Training. The idea in this first cycle was for the teachers to test out how to use some of these tools from Step 3 of the Decision Training model in their teaching practice, and to become comfortable being observed teaching in class. This was also a new system for everyone involved in the project so it was a process of learning for both researcher and research participant.

This preliminary cycle also allowed the construction of a profile of each teacher–student team that was gleaned from open-ended questions about the participants' teaching and training backgrounds. For each teacher, a profile was created based on an assessment of their prior teaching experience, their background in terms of the specific discipline they were teaching, their level of performance experience, the balance of technical and artistic experience in their backgrounds, and their habitual teaching styles. For the students, profiles were created based on prior learning, their training background, their level in their respective discipline, the level of performance experience, the balance between their technical and artistic experience, and their habitual learning styles.

The different habitual learning and teaching practices of each teacher-student pair was investigated, including the different learning and teaching "scenarios" and the rapport between the teachers and students. In this initial research cycle, we worked with the teachers to identify their objectives for the student, and how these objectives related to the student's own objectives, and those of the institution. The information obtained in this initial period served as the basis of the preparation for the following research cycles.

In relation to the action research question "What is happening now?" the participants were asked to reflect on their experience in relation to the learning and teaching that was happening in each research cycle.

Between the end of the first cycle and the beginning of the second cycle, the teachers were asked to reflect on, and then map out, what they thought were the strengths and weaknesses of their respective students, and to decide what they wanted to work on in terms of the Decision Training three-step process. They were required to select one or more cognitive skills from the seven Decision Training cognitive abilities for the student's development, and for the practice of the discipline being studied. This

identification of the cognitive skill or skills to develop is **Step 1** of Vickers' Decision Training method.

5.5.2 Second research cycle.

Corresponding to **Step 2** of the Decision Training method, at the beginning of the second cycle, a focus group meeting was conducted to discuss which exercises could be set up to activate the development of the cognitive skills, or decision, to be trained as selected by the teachers. In addition, we also discussed **Step 3** to identify what might be the appropriate Decision Training tools that could be used as teaching strategies in combination with the cognitive trigger exercises. This planning stage of the action research methodology enabled each teacher to confirm or modify their plan in response to feedback from the other teachers, and members of the research team.

During the second cycle, we observed and recorded the teachers' plans as they were put into effect in the training studio, and interviews were conducted with the teachers to assess their perceptions of these Decision Training interventions in their classes. Interviews were also conducted with the students to assess their perceptions of these research interventions. At the end of the second research cycle, another focus group discussion was convened with the teachers so we could reflect on their experiences in class and prepare final adjustments in preparation for the third cycle of the research project.

5.5.3 Third research cycle.

The third cycle was conducted in a similar way to the previous cycle. In this cycle, however, there were differences with respect to scheduling and the teachers' and students' objectives, with one teacher–student team in particular (see Section 8.5). The end of the third cycle was also the end of the data collection period, and culminated with a final focus group discussion with the teachers to review their experiences and to discuss research outcomes. Final interviews with the students were also conducted to discuss their experiences.

5.6 Data Analysis Process

Using a "three-track" analysis approach, I myself, along with Sylvain Lafortune and Patrice Aubertin, independently analysed transcripts of interviews to reduce individual bias and to deepen the analysis process (see *Figure 6*). Transcripts were analysed using a set range of up to 58 codes that identified issues such as "appropriation of performance strategy by student", "appropriation of teaching strategy by student", "appropriation of student's objective by teacher", "emotional rapport of student to learning" and "emotional rapport of student to task".

Commonalities were then extracted from the three independent analyses. I implemented this three-track approach to the analysis of transcripts to help limit my personal bias in the process, and to obtain different perspectives and also expert advice. This was done using an action research approach whereby analysis was done as the project progressed, to inform the planning of each subsequent research cycle.

	Summary of meeting with SR Monday 16 th 09h40 to 10h40 audio DBT 2.03	Summary	PA	<u>5L</u>	ΤB	<u>Codes</u>
00:20:27:00	SR: When you are doing/on trampoline it's like this so when you are jumping here you have to look here on take off and while you are up in the air you flip you twist you look for underneath your feet so on take off you have to always look there not only while in contact. As he is going up the first phase of the trick he has to be looking there. It's a weakness on bis part	Different visual cues at different phases of the skill, take off, in the air, landing. This is a weakness for SB.	Visual cue as an External feedback during performance	TS directing attention TS breaking down skills feedbacks external assessment T of S	External visual feedback Assessment of student	Feedbackext TS directing attention Directing attention

Figure 6. Example of three-track analysis process

Patterns of data became more coherent as the project progressed as a result of the three-track process of transcript analysis, and also as a result of the focusing effect of repeated reflection–action research cycles. As each subsequent cycle progressed, what was discussed became more focused, and interventions, in collaboration with the teachers, became more targeted on specific issues.

The data instruments consisted of:

- observation of teachers and students using video, audio and written field notes
- · recorded interviews (audio and video) with all research participants
- recorded focus group discussions (audio and video) with research team and teachers

- collection of relevant documents (paper and electronic) including records and photographs, and audio-visual material such as related documents and video from rehearsals, performances and creative processes
- HyerResearch software, which was used to track teachers' and student' comments and link them to codes (see *Figure 7*).



Figure 7. Example of HyperResearch data analysis instrument.

5.7 Chapter Summary

In this chapter I have overviewed how recruitment, ethics, observations, interviews and focus group meetings were conducted; the process of the action research cycles, data collection methods, and data analysis was also discussed.

In the next chapter I discuss backgrounds to each case study in detail and investigate the lived experiences of research participants in the first research cycle.

Chapter 6: Case Study Backgrounds and Research Cycle 1

6.1 Chapter Introduction

The first part of this chapter consists of a discussion of the backgrounds of participants in each case study, and the distinguishing elements of each. In addition, the different teaching and learning experiences and styles, the type of circus discipline involved in each case study, the student's level of expertise, and the degree of familiarity of each teacher with Decision Training are also discussed.

In the second part of the chapter, I track the lived experience of case study participants through the first research cycle of the project.

6.2 Case Study Backgrounds

Teachers and students at the NCS come from a diverse range of backgrounds and teaching and learning experiences, which was represented in the case studies. In this part I review the backgrounds of teachers and students in each of the case studies, the specific circus disciplines being studied; the initial objectives and expectations of both teachers and students are overviewed.

6.2.1 Case Study 1 background.

Case Study 1 teacher

The Case Study 1 teacher, referred to as Teacher 1 in this research, was a French national, originally from a non-performing science background (kinesiology) and was a graduate of the NCS teacher training program specialising in juggling.

With only six years of experience as a circus arts teacher he was the least experienced of the teachers. Prior to the start of the project, this teacher intuitively used teaching strategies that resembled some elements of Decision Training, such as variable training in that he changed the lesson themes each week; he also used a student-centred teaching style.

In terms of Grasha's (1994) teacher style categories he could be said to have a "facilitator" teaching style, which focuses on "the personal nature of teacher–student interactions" and "guides and directs students by encouraging cooperative as well as independent learning activities" (Grasha & Yangarber-Hicks, 2000, p. 5).

Teacher 1 became interested in circus through juggling while he was still a clinical scientist. His interest took him to the NCS, where he graduated from the teacher

training course and started teaching in the school—first in the recreational program, and then in the main program.

His background in sports science gave him a detailed knowledge of biomechanics and motor physiology, and allowed him to gain an understanding of how to teach juggling at an elite level, even though he himself was not an elite juggler and did not come from a performance background.

The circus discipline of juggling

The discipline-specific context varied with each case study. Juggling involves enormous amounts of focus and concentration sustained over very long periods of time. In the specific context of juggling traditionally there is an expectation of a high level of technical skill. These high-level technical skills in juggling take years to master. Jugglers spend significantly longer periods of time self-training than artists in other circus disciplines because of the amount of repetition required to master skills, and the fact that the majority of expert jugglers started training at a very young age on their own. This context could be said to contribute to an "independent" learning style, represented by students "who like to think for themselves and are confident in their learning abilities. Prefer to learn the content that they feel is important and would prefer to work alone on course projects than to work with other students" (Grasha & Yangarber-Hicks, 2000, p. 5). Juggling could also be argued to lend itself to a deductive, "top-down" style of skill acquisition (Vickers, 2003), where specific foundational skills have to be mastered sequentially before harder skills can be physically attempted.

Diabolo, the form of juggling in which the Case Study 1 student specialised, uses a prop that consists of an axle attached to two disks. Diabolo has evolved from an ancient form of juggling the Chinese "yo-yo", also known as the bamboo "empty bell" or "pull-bell": "The two ends are round saucer shapes. In the middle is a horizontal piece of wood. Mount it on a string and twirl with a vibrating motion. It emits a humming sound" ("Chinese Yo-Yo or Pull-Bell", 2015). The "bell" refers to the ringing tones emitted via small holes and made by the "yo-yo" while it is being spun. The diabolo is the modern version of this prop, developed by a French engineer Gustave Phillippart in 1906. It consists of rubber, tapered disks attached to a metal axle. The apparatus is spun using a string attached to two handles or "sticks". Usually when a juggler is talking about the "sticks" he is referring to the sticks and the string as one entity. In more advanced forms, multiple diabolos can be combined together on the one string.

There are a huge number of different types of throws, catches and forms of spinning. The string and the sticks are used to catapult the diabolo into the air often to a height of eight metres or more above the juggler. The diabolo is then caught back on the string. Sometimes other diabolos will be in play at the same time.

The juggler may also perform complex movements in the time it takes for the diabolo to return to the string. These tricks can happen in different spatial planes and on different axes. A person who juggles diabolo(s) is referred to as a "diabolist". A diabolist can move the diabolo(s) with stick(s) and string(s), with different body parts or "dance" with the diabolo(s) through choreographed interactions.

A more recent inclusion into the modern diabolo genre is the use of manipulation without the use of the string, for example catching the diabolo under the arm or back of the knee or physically handling the diabolo in other ways. Manipulation is used extensively in a sub-category of juggling known as "contact juggling", made popular by the juggler Michael Moschen in the 1986 film *Labyrinth* with David Bowie, and in his innovative composition *Light* in which he "palm-spun" up to eight 75-mm crystal balls simultaneously and introduced a technique known as "isolation", which makes the sphere appear to be suspended. An important aspect of contact juggling is the element of dance involved, and the dance-like relationship between the juggler and the object, which has been described as "like contact improv with a really predictable dance partner" (Hartnell, 2013).

Juggling requires highly developed proprioception skills, eye-hand coordination and physical and mental endurance. Objects are juggled or manipulated in traditional and non-traditional ways. Usually balls, clubs and rings are juggled but other objects can be used such as everyday props like hats and tennis rackets, or cigar boxes, poi (which are twirled), diabolos (which are spun), devil sticks or fire torches and even juggling with ice such as used by Philippe Ménard (Lavers, 2014, pp. 65-67). Juggling can be performed individually or with multiple jugglers and can combine acrobatics, dance, clowning, and character work, but the main goal is technical expertise such as the number of objects juggled and the innovation of the juggling routine. In contrast to the short routine times of trampolining for example, juggling acts often last in excess of five to ten minutes or longer. Due to the demands of the many hours of practice required to master juggling skills muscular endurance in the core muscles, arms, shoulders and back are key to juggling, as well as mental endurance.

Case Study 1 student

Case Study 1 student, referred to here as Student 1, was a self-trained, high-level juggler who had attended a circus high school in France (Conservatory of Châtellerault), and had then spent one year at *École Supérieure des Arts du Cirque* in Belgium before coming to the NCS.

The student had a very high level of technical expertise in his speciality, higher than the other students training in diabolo at the school. By the time Student 1 was 11 he had already mastered most of the traditional advanced diabolo skills:

Student 1: It's juggling, and juggling is really something usually you do on your own first. Every juggler here [at the school] really works outside [of the school]. It's often something you started to do very young and not something you just discovered here. (DBS 1.01)

This engaging with practice over periods of years to attain expertise speaks directly to Karl Anders Ericsson's findings about what he terms "deliberate practice", or "effortful activities [...] designed to optimize improvement" (Ericsson et al., 1993, p. 363). Ericsson continues, "Many characteristics once believed to reflect innate talent are actually the result of intense practice extended for a minimum of 10 years" (p. 363).

The student in this case study exhibited many personality traits and training behaviours I have personally seen in many elite jugglers—obsessive, idiosyncratic, wanting to train alone and perhaps more challenging to teach than students trained in other disciplines; that is, with the "independent" learning style discussed previously. In juggling, skills are practiced thousands of times so that they can be performed without dropping the juggling object. Student 1's self-devised training program involved working alone through an itemised list of exercises, drills and skills practice with periods of creative practice and improvisation. This characteristic of working from plans could be said to align with a habitual "deductive/analytic" cognitive style of "problem solving, thinking, perceiving and remembering" (Riding & Cheema, 1991, p. 194). The student felt that he needed to continue to train alone and stick to his training plan to maintain his technical level in the same way that he had been doing habitually prior to entering the NCS. As juggling was Student 1's primary discipline, there was a lot of

expectation from students and staff that this student would produce a spectacular artistic and technical act.

Initially the profile of Student 1 was that he was an autonomous, highly selfregulated student who had reached an expert level through his own self-devised rigorous training regime.

Having reached this level of expertise, the student was focusing not only on some specific technical milestones (four diabolos, for example), but also on working deeply into his creative practice, to find a creative context for his technical practice.

The student's plan to investigate creative practice was to experiment with his whole approach to diabolo by literally "deconstructing" his diabolo practice. He wanted to examine the material components of diabolo—the diabolos themselves, the string and the sticks—and the way each of these material components was able to be manipulated, and he also wanted to investigate his mental and physical relationship to these objects.

This student initially appeared to be highly autonomous with a detailed personal plan of training and performing objectives. He was an autodidact: self-trained and selfcontained with an "independent" learning style, preferring to train away from the group and work on his own training plans. The student had a personal three-year plan carefully documented and categorised in a large file. This file detailed all the various skills and exercises he felt he needed to complete each week. His meta-objective over the three years at the school was first to "deconstruct" and then "reconstruct" his diabolo technique and develop his creative practice. This technical and creative practice involved research into his personal "embodied practice", which mixed contemporary dance, contact juggling, acrobatic movement and technical diabolo juggling tricks.

Student 1's plan for the first semester assessment in December 2011 was to create a piece consisting almost entirely of manipulation of the diabolos with no sticks; with the exception of a short "break-out" section in which he would juggle four diabolos with string and sticks in a traditional throwing trick called "4 high". The feat of juggling four diabolos is considered a highly technical trick and is mastered by very few people. The world record number of diabolos that it is currently possible to juggle at the same time is six ("6 high").

Student 1's plan for the second semester assessment in April 2012 was a composition with just sticks and strings, and no diabolos. He had plans for all of his practice and performance work all the way through to his final graduating piece, which would take place in June 2014. For his graduation piece he planned an act that would

function as a showpiece for all his technical and creative skills, with one section consisting of just diabolo manipulation, another section with just sticks manipulation and a third section with sticks and diabolos.

6.2.2 Case Study 2 background.

Case Study 2 teacher

This teacher, referred to as Teacher 2 here, was a French Canadian speaking fluent English, who had over 17 years' experience performing in circus. With 14 years' experience as a circus arts teacher, he was a specialist in hand-to-hand (a form of partnering using lifts, and acrobatic and hand-balancing skills) and trampolining.

Teacher 2 was also a certified gymnastics coach, and a master course conductor with the National Certification Coaching Program of Gymnastics Canada. He was one of the main instructors on the teacher training course at the NCS, working closely with Patrice Aubertin on the construction of the course. He had a degree of familiarity and interest in Decision Training as he had been made aware of some of the Decision Training tools in his gymnastics coaching courses. He was aware of Vickers' work at *Cirque du Soleil* in 2000, and he had been employing some aspects of Decision Training in his classes, such as "variable practice" and "random practice", and "questioning" to engage self-assessment.

My initial impression of Teacher 2 was that he was a teacher with a high level of technical knowledge in his field, already familiar with using some Decision Training tools and able to use a range of them effectively. In the first focus group meeting, the teacher acknowledged that he was interested in how the use of the Decision Training tools would transition from sports to circus arts and what sort of adaptation of the tools would take place in this new environment.

In the first meeting, the teacher also talked about "the conditions that give rise to learning", which builds on the idea of the teacher as a "mentor" guiding the student and providing a learning environment that acts as a scaffolding or framework built around the student to support them in their learning, and which is then dismantled and rebuilt to facilitate new learning as required by the student. Although the teacher leaned towards the "expert" teaching style in terms of possessing "knowledge and expertise that students need" and also being "concerned with transmitting information and insuring that students are well prepared" his teaching style also aligned with Grasha's "facilitator" category (Grasha & Yangarber-Hicks, 2000, p. 5). Both Teacher 1 and 2

talked in terms of "guiding" their student through "cooperative" and "independent" learning activities (p. 5).

The circus discipline of trampolining

Like the disciplines of juggling in Case Study 1, trampolining is also highly technical, and therefore Teacher 1 taught from a technical acrobatic perspective. Similar to the first case study, students are required to master known skills, which they need to include in their repertoire to be considered an expert in the field. Unlike the discipline of juggling as discussed above, teaching trampolining requires that the teacher be constantly mindful of the logical and safe sequencing of skills. Only once a student has reached a very high technical level do they start to invent new skills, or new ways of doing skills in the discipline repertoire.

George Nissen patented a design for the modern trampoline in 1936 and was primarily responsible for its widespread use in recreation and gymnastic competitions. In World War II "the trampoline was used to train pilots to improve their spatial orientation and balance, and after the war, it was used in schools and competitively" (Atilgan, 2013, p. 16). In 1964, the first Trampoline World Championships were held in London, and trampolining was eventually inaugurated as an Olympic sport at the Sydney Olympics in 2000.

A number of "rebound" sports have emerged from the development of the trampoline: solo trampoline; synchronised trampoline where two athletes perform side by side on separate trampolines; power tumbling, which takes place on a 25-metre sprung track; and double mini-trampoline, a smaller trampoline with a sloped section up to which gymnasts run and jump on, then jump while performing a skill onto a flat section, before dismounting while performing a second skill. Specific trampoline skills include combinations of jumps including pike, tuck, puck (a combination of a pike and a tuck), straddle, and forward or backward somersaults and twists.

Trampolining requires acrobatic ability and aerial awareness and involves sets of aerial rotations and twists in various directions and with various body shapes such as pikes and tucks. In contrast to juggling trampoline routines are usually quite short with a competition routine composed of ten contacts with the trampoline bed with various sets of aerial skills performed. This is primarily due to the high levels of energy and aerobic fitness needed for trampolining. Of all the three disciplines involved in this study, trampolining is the most akin to gymnastics because of its acrobatic base. Acrobats

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require strong legs, feet and ankles for take-offs and landings, a strong core, arms, chest and back. Unlike juggling for example, the risk of injury is quite high due to the height the athlete reaches on each rebound and the instability of the landing surface.

Case Study 2 student

In Case Study 2, the student, referred to as Student 2 in this research, came from a social circus/community circus program in St Louis, Missouri in the US. The central idea informing social circus is to introduce circus skills and games in communities where there are social problems; to teach circus to young people to help them develop their self-esteem and regain trust of others; and to offer new pathways for young people out of cycles of behaviour brought about by difficult social situations, often involving drugs, alcohol and violence (Lafortune & Bouchard, 2011). Like many young people from disadvantaged backgrounds, Student 2 had faced challenges growing up on the streets and in school. He had learnt a lot of his acrobatics on the streets, and was then taken into an established social circus program in St. Louis where he excelled and became a role model for other young people.

His social circus teacher was able to secure a scholarship for him to train at the NCS. Because of his community circus background, Student 2 was used to working and training in groups, which meant he was comfortable in the class situation in Case Study 2, which involved three, or sometimes four, students.

In this respect Student 2 exhibited the preferred learning styles of "collaborative"—described by Grasha and Yarbanga (2000, p. 5) for "students who feel they can learn by sharing ideas and talents. They cooperate with teachers and like to work with others"—and "participant", described as "typically eager to do as much of the required and optional course requirements as they can".

He was an experienced performer and acrobat, partly mentored and partly selftaught. Similar to Student 1, he had gone through a period of self-training in the form of practice (Ericsson et al., 1993) at a young age to reach a high level as an acrobat. Although Student 2 was new to the discipline of trampolining, he had an acrobatic foundation, and experience on power track—a tightly strung trampoline runway used for power tumbling. Student 2 was what is known at the NCS as a "generalist"; that is, a student who trains in a number of acrobatic disciplines. Trampolining was not the student's main discipline but rather a complementary one, so the pressure of assessments in the form of presentations was absent, in contrast to the other two case studies.

My initial impression of Student 2 was that he was a resilient and responsive student with a high level of self-regulation and intrinsic motivation. His social circus background may have been a contributory factor in his high level of self-regulation and motivation, as these are key "life skills" that social circus instructors focus on developing in their students.

Student 2 was eager to learn and to engage with the teacher. Although he was a high-level acrobat, he did not have the polished lines and textbook technique of a student trained at a regular circus school, but he did possess a desire to excel and had a great deal of talent and facility.

6.2.3 Case Study 3 background.

Case Study 3 teacher

The Case Study 3 teacher, referred to here as Teacher 3, was a highly experienced Russian aerial coach and ex-elite performer with 20 years of experience as a circus arts teacher, and possessing a high success rate in coaching high-level aerialists. Teacher 3 spoke Russian and some French, and minimal English. For Teacher 3, communication with her student was a challenge as her student spoke English with only a small amount of French and Russian.

Teacher 3 was new to the use of Decision Training, and in this project was using Decision Training tools for the first time (apart from some of the tools that she may have been employing intuitively in her teaching practice). The initial profile of Teacher 3 was of a highly experienced teacher used to working with responsive high-level and elite students. Teacher 3 had been an accomplished performer who was able to physically demonstrate many of the skills and sequences that she was teaching in this discipline. Of all the teachers, this teacher was probably the most traditional. She had a long track record for students achieving at a high level and, coming from a Russian system, she had a more traditional direct approach than the other teachers.

She could be said to have a mix of teaching styles as described by Grasha and Yarbanger (2000): that of "formal authority"—that is, possessing "status among students because of knowledge and role as a faculty member. Concerned with providing

positive and negative feedback, establishing learning goals, expectations, and rules of conduct for students. Concerned with the correct, acceptable, and standard ways to do things and with providing students with the structure they need to learn"—and "personal model", which is teaching by personal example and establishing "a prototype for how to think and behave. Oversees, guides, and directs by showing how to do things and encouraging students to observe and then to emulate the instructor's approach" (p. 5).

Teacher 3, however, was also open to trying new teaching strategies that were not part of her normal teaching practice as she indicated in her first initial interview, "I feel very comfortable and I'm open to trying these things" (DBT 3.01).

The circus discipline of dance trapeze

In Case Study 3, involving dance trapeze, the discipline-specific perspective was a little different to the other disciplines because of the emphasis on artistic over technical aspects. This is why students with dance backgrounds are often chosen to study dance trapeze in circus. The dance trapeze is basically a heavy solid metal bar suspended from two vertical ropes joined together with a swivel. This is attached to a wire or rope pulley system that enables the trapeze to be raised and lowered.

Dance trapeze, or low-flying trapeze as it is sometimes referred to within the discipline of aerial dance, was invented by Terry Sendgraff, a competitive trampolinist, flying trapeze practitioner and dancer. As a dancer, she studied with modern dance practitioners Alwin Nikolais and Al Wunder. In 1976, Sendgraff introduced a new approach to the trapeze that she called "motivity". Dance improvisation played an important part in the origins of this discipline: "Terry hung several trapezes in various formations. Using five or six dancers, they improvised using the trapeze, each other, the walls and the floor" (Bernasconi, 2008, p. 12). Sendgraff revolutionised the way the traditional trapeze was used:

In the early years, Terry's trapezes were low and their point of attachment to the ceiling was with two ropes, like a swing, so the movement possibilities were forward and backward. Later, she moved the two points in the ceiling to a single point, giving the trapezes more variation, such as spinning or flying in a conical shape (big circling movements), as well as swinging forward and back. This single-point low-flying trapeze became the vehicle that launched the aerial dance movement. (Bernasconi, 2008, p. 12)

Sendgraff influenced a generation of aerial dancers, and dance trapeze has now become an established discipline in circus schools and in circus performances.

In dance trapeze, the focus is on the dance element: dancing with the trapeze in inventive and innovative ways. Working with the dance trapeze is like working with a dance partner that can move around you in three dimensions, and from which you can also climb and suspend yourself while you are being raised and lowered, spun and swung, or while you are travelling through large arcing pathways. A simple dance trapeze act would consist of a static section where the trapeze remains in a fixed position, a spinning section in the air or in contact with the floor, a grand tour—where the trapeze moves in a large circular pathway—and sometimes a swinging section where the trapeze moves in a straight line in a forwards–backwards pathway. The movement material is composed of a mix of traditional trapeze actions with dance movement transitions. Dance trapeze is very much an artistic discipline and there is no fixed repertoire of tricks that the student is under pressure to achieve. In fact, with dance trapeze the opposite is true—there is the desire for the student to discover their own style and to create unique movements.

With dance trapeze in particular, there is a lot of inherent changeability in performance. For example, because the trapeze is suspended by one point, it naturally turns and is always slightly swinging, which means the performer is always performing in a constantly changing frontal plane. Therefore, the performer must continually make decisions based on the position of the trapeze in space. In addition, the placement of the performer's weight on the bar and on the trapeze ropes is very delicate as the bar itself is very unstable.

Solo dance trapeze is a discipline that involves spins, swings, and circular 'tours' through space, and is performed in a stationary ('static') position, ascending or descending via a winch or manual pulley system. The dance trapeze artist is required to be able to hold different postures, including inversions, standing on the bar, hanging from the bar or ropes and at times being in contact with the floor and the trapeze at the same time. They perform at variable heights often up in excess of seven or eight metres from the ground. This requires very high levels of body control, core and upper body strength, and spatial awareness. With trapeze there are also specialized areas of strength such as grip strength to support the whole body weight on the bar or ropes, and leg and foot strength for hanging upside down from the trapeze bar or ropes by the knees, ankles or feet. While the risk on injury for an aerial artist is arguably not as high as

trampolining due to there being less impact on the body, the risks are still much higher than the risks involved in juggling.

Case Study 3 student

My initial profile of Student 3 revealed that her habitual learning preference was predominantly non-verbal. She did not ask questions, seemed a little intimidated by the teacher, and was reluctant to initiate any activity in the class by herself. Student 3 was different to the other two students in the project because she had very low selfregulation skills. This may have been caused by a number of issues—a previous teacher had been very strict using the Eastern Bloc style of direct behavioural teaching, making the student repeat exercises until mastered and raising her voice when mistakes were made.

Student 3's learning behaviour fits the "dependent" category of Grasha and Yarbanger, which refers to students who show "little intellectual curiosity and learn only what is required. View teacher and peers as sources of structure and support and look to authority figures for specific guidelines on what to do" (2000, p. 5).

Student 3 was different to the students in the other case studies; although she did have dance skills and a high level of body flexibility from her dance training and early rhythmic gymnastics training, she lacked foundational discipline-specific skills and discipline-specific body conditioning. Student 3 had no background working with the aerial apparatus, which she was learning for the first time, and therefore had no movement vocabulary on which to draw. Student 3 was also a *mise à niveau* student, meaning that she was in a one-year probationary program to upgrade her skills and strength so that she could re-audition for the first year program.

Often students from non-circus backgrounds are picked out of NCS auditions for the main program and put into a probationary year to see if they adjust to circus training. If they come from dance, as did this student, with no experience of circus work, they need to build upper body strength, and the specific agility needed for the apparatus. In particular, this student needed to build upper body strength for trapeze and adapt to the unique spatial orientations and tempos of aerial work. With the dance trapeze, the student had to adjust to a new and unfamiliar world involving working at height; spinning while suspended in the air or in contact with the ground; hanging upside down; climbing the trapeze ropes; holding her body weight with different body parts including feet, backs of knees, elbows and back of neck; catching and releasing; and learning how to move from the ground to the air and back again.

Student 3's character appeared to be introverted compared with Student 2 and, unlike both Student 1 and 2, she was a newcomer to circus with no acrobatic background. She was very quiet and spoke only when spoken to, which may have had something to do with her status as *mise à niveau*. This was in stark contrast to Students 1 and 2 who were both very verbal. Although Student 3 was Russian born, she was brought up in the US from the age of eight, and therefore spoke English and could remember only a very small amount of Russian, which was the first language of Teacher 3, so there were significant issues that affected communication in this case study.

6.2.4 Socio-cultural backgrounds of research participants.

While Socio-cultural aspects of learning and performing—for example what effects gender and ethnicity might play in the learning and teaching styles adopted by students and teachers and how these aspects affected the use of Decision Training in this project—are outside the scope of the thesis, it is worth briefly noting certain aspects of participant's backgrounds such as age, language, experience, and, as they were all international students, what countries they had come from to train at the school.

All three students were young (18 years old) and had travelled from another country to train at the NCS. All were from different cultural backgrounds: one was from France (Student 1); one from St Louis, US (Student 2); and one was born in Russia then raised in South Carolina, US (Student 3). Student 3 was living in student accommodation at the school, whereas the other two were living with other students from the school in private accommodation in Montreal.

There were also language and communication issues to be considered in each case study. In Case Study 1, both teacher and student were from France so the class was conducted in French and there were no language issues; however, Student 1 had to adapt to the significant cultural differences between France and the French Canadian culture in Quebec. Teacher 2 was French Canadian and had excellent English so the class was conducted in English for the student participating in the research study (and another US student in the class) but also in French for the two French-speaking students in the class. In Case Study 3, the teacher was Russian and could speak French, but the

student was US-raised and only spoke English and understood only a little Russian, so there were significant language issues.

Socio-cultural issues could be the subject of further research investigating what effects these have on learning and teaching at the NCS, particularly in relation to Newell's constraints-led learning model (1986), upon which Decision Training is based (Vickers, 2007, p. 1) and that takes into account physical and social environmental constraints on the individual in the learning of motor skills.

6.3 Research Cycle 1: Introduction

In this section I discuss the lived experience of case study participants in the first research cycle. In keeping with the qualitative action research methodology, the lived experience of teachers and students involved in the project was taken into account when collecting and reflecting on these data, both during the course of the project and after it had been completed. It is from a selection of the data in this section, and Chapters 7 (Research Cycle 2) and 8 (Research Cycle 3) following that I draw out the project's research findings in Chapter 9.

I have reflected on the data from observations, interviews and focus group meetings gathered in these three research cycles by returning to Stringer's (2014) action research question, "How can we make what is happening now better?" This has meant trying to form a broad picture of teachers' and students' lived experiences both in applying and in being exposed to a new training model. In this research, as previously mentioned, there was a range of participant agency with the teachers driving the process of choosing and developing interventions in their application of Decision Training, and the students being exposed to the interventions without prior knowledge of which interventions they would be.

In the first research cycle, teachers were asked to explore the use of Decision Training tools from Step 3 of the model. This was to allow time for the teachers to become accustomed to using these new teaching tools, and for observing the students in the training studio before having to make a decision on which cognitive weakness to select for working on with the full three-step Decision Training model. This period also allowed time for the students to adjust to a new learning environment.

6.4 Research Cycle 1: Case Study 1

Watching the juggling classes in Case Study 1, I observed that the teacher had a student-centred teaching approach that overlapped with some of the principles of Decision Training, such as working collaboratively on the student's class training. He had stated that he saw his role as that of a "guide" because for him, for learning to occur effectively, the student needed to be self-motivated, "I prefer that the motivation comes from the student instead of I arrive and 'go go go'" (DBT 1.01) reaffirming my initial impression of the teacher as having a "facilitator" type teaching style.

I also observed that Student 1 had his own habitual training patterns that employed a form of self-directed training based on a detailed self-devised personal training plan.

During the first interview, which took place in this first research cycle, Student 1 revealed that there was a certain tension for him between his perceptions of what was expected of him in class training, and his objectives with his own personal training. This confirmed he had the "independent" student learning style described in Chapter 5:

Student 1: But the problem is if I only do diabolo in my diabolo class I would take maybe three or four classes to do one time my program and I have [to have] time outside and for me as a juggler you need it. Two hours a day is not enough if you really want to increase your skill. For me it's very natural to [do] the rest out[side] of the [class] and often if I work alone [in] only two hours I'm going to do more than what I do with [Teacher 1] because with [Teacher 1] he always notices things and we stop and we talk about things and he wants me [to] try different things so I do not go as far as I would go alone but he brings [my attention to] things I would never notice or find alone. (DBS 1.01)

In this first interview, Student 1 also alluded to a tension that would continue to exist for him while he was at the school. This tension was between, on one side, the objectives of the school in that what was expected was a piece that highlighted the high technical level of the student, and, on the other side, the student's own creative research objectives. The student described how he wanted to "dig" (DBS 1.01) deeper into his creative practice and explore new ways of manipulating his apparatus, including working on a process of "deconstruction". My understanding of this objective was that the student wanted to take apart his technique to find new combinations, and new ways of using the component elements of his act; that is, his body, the diabolo(s) and the stick(s).

At the same time, the student talked about time constraints, and his perception that he needed to maintain his personal repertoire of technical skills by practising outside of class as a result of the "limited" amount of scheduled class time (two hours a day) and the time taken up by the interventions of the teacher. It is also worth noting that of all the students, Student 1 spent significantly more time with his teacher than Students 2 and 3 did with their teachers: Student 1 trained with his teacher eight hours a week, whereas Student 2 and 3 trained with their teachers for two hours a week. This was due to diabolo being the primary discipline for Student 1 as opposed to a complementary discipline for Student 2, and, in the case of Student 3, the student was taught by two different teachers, only one of whom participated in the study.

In the first interview, it was also revealed that Student 1 had a perception of his expertise as being more extensive than other jugglers around him, and this was reinforced by being in a group with two other students who had much less experience with the diabolo:

Student 1: And maybe I'm sure because I already know what I want and I have [...] experience in diabolo. I already have all the technical tools maybe other jugglers are still looking for when they are in school. [Teacher 1] knows I am here to develop my thing and he just guides me in it. (DBS 1.01)

Teacher 1, in order to be able to work with this complex and seemingly highly autonomous student, took on a role not only as a guide, but also as a negotiator between the school's expectation of a highly technical assessment piece, and the student's objective of focusing on creative research. When asked about his plan for working with the student, Teacher 1 responded:

Teacher 1: It's specific for each student. For me it's not imaginable to come and say, "I don't know you but for December you have to [do] that that that". It's impossible for me to do that because they have a certain level, and they have also expectations. It's not for me to make them do it. I can ask [Student 1], "ok I want you to do five diab[olo]s and a really technical Japanese act," but he [might not] want to do that. (DBT 1.01)

Teacher 1 had worked with this student to formulate a plan at the start of the first semester in an example of how he intuitively involved the student in a "self-coaching" exercise that is, in fact, a Decision Training Step 2 exercise. In the following extract, Teacher 1 talks about this self-coaching process in action, which bears the hallmarks of a "facilitator" teaching style: Teacher 1: I asked him to do a list of all he wants to work on and he's really organised. So he classified without stick—with stick, only one diab[olo] and two sticks. After that [...] it was a *partage*. (Here the teacher uses the French word *partage* for "partnership" indicating the plan was made collaboratively). Interviewer: partnership, sharing?

Teacher 1: Yes, sharing. He brought his objectives and we discussed it and then after that I did a list of the things to do for the plan. (DBT 1.01)

Student 1's high level of autonomy and firmly held personal objectives meant there was the potential for tension to arise between the expectations of the student, as guided by the teacher, and the expectations of the school. This tension became apparent in the lead-up to the first assessment, which coincided with the end of the first observation cycle. At this point, the student wanted to present a composition based around manipulation and not on traditional diabolo tricks or other work that had been practiced in the class sessions. He also did not want to perform any of the technical skills normally associated with high-level diabolo juggling that had been worked on in class. This tension required the teacher to take on the role of negotiator:

Teacher 1: I ask him "why only manipulation, and why don't you want to put [...] what we worked on also during the first session?" Because we didn't work only on [...] manipulation, we worked [on] all the program and he said to me he wanted to go deeper and deeper on manipulation [of the diablolos] (rather than just traditional juggling tricks) and test the material in front of the public. And for me it was an interesting point and during the conversation we [had] a discussion and at this point we plan for three years because [I said to him], "if you do that in December what do you want to do, what is your point of view [about what you want to do] in April and after that?" So for the first thing, he wants to test the [manipulation] material, not classical material like technical stuff with diab[olo]s and that. We work on [it] (in class) but we don't want to present that (in performance). And as it is [a] coherent [plan] for the three years I am in agreement with that. (DBT 1.01)

Having collaboratively worked with the student to come up with a long-term strategy, Teacher 1 then took Student 1's plan to the head of studies at the school, taking on the role of negotiator between Student 1 and the institution:

Teacher 1: I have to defend his point of view to the school. It's quite risky [...] I have to defend that [to the school management] because maybe it could be a

surprise. The expectations of the school are maybe there (indicates a high technical level with his hand). [...] The school knows he is really good, the school wants to see a "wow act", technical, and I am a technical teacher so the school wants to see technical stuff, but if we (Student 1 and himself) don't do that (i.e. experiment) in the first year he can't do that during the second year ... because in second year he has to think about his act ... the third year *épreuve synthèse* act (this is the graduation act). [...] I am sure that [his plan] is a good direction, that's good for him globally for the three years but for the December presentation, it's a risk, to be judged, for him, for me ... through the presentation we are judged I think (makes a "that's how it is" gesture with his body). (DBT 1.01)

The second interview with Teacher 1 was during the build-up to the December presentation towards the end of the first research cycle. Teacher 1 felt that Student 1 was training in an isolated internal fashion, "in his bubble", and was somewhat resistant to teaching interventions, and was being protective of his personal creative "space" (DBT 1.02). Here the characteristics of Grasha and Yangarber-Hicks' "independent" learning style were evident (2000, p. 5).

Teacher 1 respected Student 1's desire to explore creatively and not just reproduce traditional technical tricks, but at the same time he gappled with how to introduce teaching interventions into the learning environment:

Teacher 1: I feel he has a big bubble [around him] and I don't want to go in the bubble (makes a crashing sound) [and say], "ok now we are going to do that that that, and try that, try that and go! go! go! ... [...] you have to put that in your presentation and you don't have [a] choice". [If he does that] he's only a robot (mimes doing traditional diabolo tricks). (DBT 1.02)

In this first research cycle, the teacher used a number of Step 3 Decision Training tools to get the feel of them before he went into formally using the Decision Training 3 Step model in the second research cycle. He felt that using "video feedback" would be useful to point out to Student 1 that his internal thought processes, such as overthinking the narrative context of every action in his compositions, were actually restricting his creative process and the flow of the act. Student 1, however, did not want to look at himself on video initially because of a perception that looking at the video would lessen the validity of his creative process, saying "I don't want to do something from outside I want to do it from inside and after to correct the [understanding] I have of my movement or things with the video" (DBS 1.01).

After some time, Teacher 1 was able to bring the problem of "overthinking" to Student 1's attention by pointing out this "deductive/analytic" (Allinson & Hayes, 2012; Riding & Cheema, 1991) cognitive style tendency through starting to watch video recordings of his act:

Teacher 1: He has for every movement his own story and when we watched the video [...] in the beginning I said, "yes you have many stories, many emotions, but for us to watch it's complicated, there's no link between each and [it's] too much in the details." And he is at the point [where] the details are not necessary, more details are not necessary. That's enough, after that you have to link, connect each detail. (DBT 1.02)

Once Student 1 started to engage with video feedback, Teacher 1 was more able to communicate with him about the issue of overthinking the details in his creative process:

Teacher 1: And yesterday we watched the video of his act, and the beginning became really complicated, there's a lot of emotion, so I said to [Student 1], "it's complicated" [...] And [Student 1] said, "yes you're right about the fact that it's too [...] complicated". When he watched it he agreed with me. (DBT 1.02)

I observed that one aspect of Student 1's isolated and internal mode of training concerned the way in which he received new ideas from his teacher. For Student 1 to accept an idea proposed by Teacher 1, there seemed to be what I observed as a "gestation period" or what Janet Davidson (2003) describes as a period when an idea undergoes "incubation" (p. 162). This gestation period entailed an initial rejection of the idea and, then, after a week or two, the idea would either remain rejected, or would have been appropriated.

For every first year student at the school, the December presentation is the first time the whole school, the management, other teachers and the rest of the student cohort get to see the student's "act", or the beginnings of what will be their signature work by the end of the third year. During the December 2011 presentation, at the end of the first research cycle, Teacher 1 felt that the student's performance in his assessment presentation was affected by mental distractions. It needs to be noted that there was also a physical factor that affected the student's performance: he was recovering from an ankle injury he had sustained several weeks earlier. With respect to Decision Training, from the teacher's perspective it was evident that the student was being over-analytical, focusing too much on mental concepts such as the narrative detail of the piece, and not enough on what he was physically doing in performance. This resulted in the movement being blocked and his act lacking a compositional flow.

This lack of tactical performance skill was also acknowledged by Student 1 after his December presentation:

Student 1: It's not [the] first time it happened. Often when I do an act. When I present it I do not have as [much] fun as when I do it in my rehearsal. I am not as "alive" as I would like. I am thinking about myself. I am like looking at me doing the act instead of being inside it ... that was what was happening. But this is really the thing I want to work on because I realise a lot now this morning when I see everybody [...] that the aspect that needs to be more worked on is that. How you feel on stage and how do you deal with what you feel. But really on stage it's very different because this is the result with expectations, stress and everything. And on stage I am still like I am not alive. I [am] thinking about my things. (DBS 1.02)

Student 1 was puzzling because, despite on first viewing appearing to have a high level of self-regulation, he in fact had doubts about his own performing ability. This sat at odds with his autonomous behaviour in training but, as Zimmerman points out, self-regulation is closely linked with "self-beliefs and affective reactions, such as doubts and fears about performance contexts" (Zimmerman, 2000, p. 14). The student, though functioning at a very high technical level, was not at the same level in terms of his tactical approach to creative practice and performance and so, actually, there was much work to be done in terms of developing his self-regulation to deal with these aspects of creative practice, and his tactical performance skills.

In the focus group meeting at the end of the first research cycle, Teacher 1 reported that he thought the Decision Training tools were "good tools for him" as a teacher, and that his goal was to acquire more precision in using them, that the research was "confronting him", and that he was working with a type of student that made the process of trialling the tools quite challenging. (See also Appendix 2.1 for notes from this focus group meeting). He found the focus group meetings stimulating because they provoked reflection on his pedagogical ideas, and he acknowledged his lack of experience using the tools compared with the teacher in the second case study.

Teacher 1 proposed that variability in practice design did not just have to apply to learning motor skills, but suggested that the concept could also be applied thematically; for example, by introducing different themes each week into the classes, such as working on peripheral vision, planes, axes and so forth. Here we see an example of how the Decision Training tools, when taken out of their sports-based context and applied within a performing arts-based context, could function if taken into the general teaching program at the school and used in the context of circus arts training.

By the end of the first research cycle and prior to the formal introduction of Decision Training interventions in the second research cycle, a picture of Teacher 1 with his "facilitator" teaching style, and Student 1 with his "independent" learning style (Grasha & Yangarber-Hicks 2000)—and the way they interacted with each other—had been built up. It was apparent that Teacher 1 did not yet have a firm plan for the student, and that he was still feeling his way with what was essentially a challenging student who was resisting accessing processes, material and ideas in the learning environment that could have been useful to him.

Action research's design encourages participants to reflect on past actions, and to think about ways to do things better. With respect to the project's research objectives, Teacher 1 was required to propose the next course of action after reflecting on his experiences in the first research period. Through discussions he was able to reflect on the particular cognitive weakness he felt Student 1 needed to work on. In this way, the teacher himself proposed the action for the second cycle.

6.5 Research Cycle 1: Case Study 2

Student 2 was not under the same sort of pressure to produce an act that would be assessed in performance, as trampolining was his complementary rather than his specialist discipline. With this teacher–student pairing it was very evident that they both had the same objectives: to correct the unpolished street technique of the student so that he could achieve the higher level skills of which he was obviously capable.

Student 2's objective was to be able to include trampolining as part of his skill set so he had more to offer prospective employers:

Student 2: And my biggest goal is to clean [my technique up], get my technique really solid and get a few big tricks and just to have trampoline [in] my resumé to offer to these circus companies so I can be more versatile and I can be [...] well rounded in every aspect of circus. (DBS 2.03)

He was attracted to coming to the NCS because of the level of teaching the school could offer him:

Student 2: ... which is why I came here [...] the teachers know a lot more. So I'm going to learn a lot more because their knowledge [of] acrobatics is greater than [my] teacher back home [...]. Like back home—basics and technique. Here—big tricks and learning to perfect technique. (DBS 2.02)

Teacher 2 described the student as being in transition between a rough technique and a good technique: "he doesn't [have] his internal reference yet how to do it, how he feels, so it throws him off a bit" (DBT 2.01). Teacher 2 also described Student 2 as having the capacity to reach a very high level as an acrobat, "so we have to find ways to get to that point because he needs that in order to go at the level that he's capable of and he wants to achieve. He's got all the talent for that" (DBT 2.01).

Right from the beginning what distinguished this teacher–student pairing was their synergy in terms of teaching objectives and learning outcomes. Student 2 was aware of his problem—a rough technique and a lack of a strong awareness of the technical components that needed to be attended to in each part of the skill:

Student 2: Back home I would just attempt a trick and it would be bad or good [...] and then I'd put it on the shelf and I [would think I] have that trick. But I really didn't have it to perfection. I would just do it and it wasn't clean [and] it was unsafe really. (DBS 2.02)

Teacher 2 approached this problem by developing Student 2's awareness of what goes on during an acrobatic sequence on the trampoline. In the extract below he explains his approach in teaching the student how to "break down the skill":

Teacher 2: It's the same process as any skill that you're learning. You go step by step and when you're ready for the next step then you go [...]. So I had a drill which is an easier drill. And then after that drill he did a better technique and then I moved onto the next one. (DBT 2.02)

This shows how specific use of some aspects of traditional training can work alongside Decision Training when, as was the case here, some linear sequential practice was used ("step by step") so the student become aware of foundational biomechanical elements of a skill to be able to perform it safely. The necessity for this process to occur is accommodated in the Decision Training model, and is discussed by Vickers in her description of the coaches' use of "bandwidth feedback" as a "gradual reduction of input from external sources" (2007, p. 202) One of the research findings that emerged early on is that, in areas where foundational knowledge is lacking, linear sequential progressions may be required for the student to safely gain foundational knowledge before beginning to vary sequencing.

However, this experienced teacher was quickly able to bring in Decision Training strategies when working with this particular student, who was very receptive and quick to respond to learning tasks. In terms of the learning styles literature, this student had "participant", "collaborative" (Grasha & Yarbanger-Hicks, 1994) and "intuitive" (Felder & Silverman, 1988) preferred learning styles, and also a "visual" perceptual preference (Reid, 1987; Fleming & Bonwell, 2001). In fact, the student refers to himself as being "very visual person" in DBS 2.02. Having said that, as the teacher pointed out, he was also to a lesser degree, a "kinaesthetic" learner (Reid, 1987; Fleming & Bonwell, 2001).

Here Teacher 2 discusses his habitual use of "variable practice" and his specific employment of this strategy with Student 2:

Teacher 2: I don't like to overdo the same trick because I feel that they won't have the same focus even though [...] they're training for that. I like to change often and do specific different things to develop overall motor skills and behaviour and [...] focus [...]. I'll do more progressions with someone with less talent. I'll do more repetitions before moving to the next step. With [Student 2] I [can] go faster but still he doesn't [have] the full control yet. But it's getting better. I mean for that you don't teach. He has to feel it. (DBT 2.02)

Something I noticed about Teacher 2 was the speed with which he was able to bring Decision Training methods into the training environment. Teacher 2 normally used a lot of questioning as a form of feedback and had a specific approach as to how, and when, he used questioning: "when you question you aim your question at the answer you are looking for" (DBT 2.01).

In this first research cycle, I suggested Teacher 2 experiment with using "bandwidth feedback". When Teacher 2 increased the use of "bandwidth feedback", the drop-off in success was immediately apparent as Student 2 was forced to use more cognitive effort to search for answers as to why things were not working and to search for solutions to problems. As previously discussed, Vickers and others have shown that this is something that will happen over the short term (2007, p. 202). However, with this student, because he was so quick to respond to teaching interventions, the level of
progress rapidly sped up again once he had acclimatised to less direct feedback and started to develop his own self-assessment skills.

From the first research cycle, things moved quickly with Student 2 despite an injury that caused him to have to rest for a few weeks. Student 2 was fortunate to have two more "classically trained" students working in the same class, so he was continually being exposed to students with a higher level of technique. This provided a constant source of live "modelling" that enabled the student to obtain real-time visual models of correctly (and, just as usefully, incorrectly) performed techniques, which became reference points for his own performance of these techniques.

In the focus group meeting at the end of this first research cycle, Teacher 2 said that he wanted to "refine" his use of the Decision Training tools. He aimed to continue working on Student 2's awareness of how to break down the technical aspects of trampolining, but also to focus on the quality of the student's movement through using the Decision Training instruction tool of "modelling", or exposing the student to exemplars—both live and recorded—of high-quality movement. He noted that the school's objective was to produce students with a high level of artistry in their movement. Teacher 2 felt the logical progression to achieve this was to focus on corporeal awareness, and that once Student 2 was aware of his body in space he could then start to direct attention to aesthetic concerns such as straight legs and pointed feet, and to artistic concerns such as the quality of movement dynamics in the performance of skills.

Teacher 2's analytical approach, as a result of his extensive studies into coaching as part of his accreditation as a master gymnastics coach, meant that he reflected on his teaching plans in great detail and was precise in their implementation characteristics of Grasha and Yangarber-Hicks' (2000) "expert" teaching style. He was also able to be highly responsive to the changing dynamics in an acrobatics-based class, where there is a very real risk of injury if the student has even a momentary lack of focus. Teacher 2 was skilful at swiftly adapting his teaching plans in response to changes taking place in the learning environment from moment to moment. In this way he was able to change his plans if the situation required it; for example switching to direct training if there was a safety issue involved:

Teacher 2: We have to mention, it's [like] a non-written law. Every time when safety is involved you have no choice. I said you have to do that—to explain to

make sure it's clear—because it could go wrong [...]. It's like direct teaching. (DBT 2.01)

His adjustments depended on his reading of Student 2's verbal and body language and his perception of the student's stress levels:

Teacher 2: Because [if] he's stressed then he has more chance to have injuries, so we have to find ways to get to that point, because he needs that in order to go [to] the level that he's capable of, and he wants to achieve. He's got all the talent for that, so I have to make sure that I push him out of that comfort zone, but I have to bring him back to the comfort zone so he's not too stressed. (DBT 2.01)

Another characteristic of Teacher 2 was that he was not afraid to tackle a harder Decision Training tool such as "hard first" instruction to introduce a high-level technical or creative skill early into the training process. Below, Teacher 2 describes how he went about approaching a "hard first" skill that is more advanced than Student 2 was comfortable with.

The skill was a double layout, which consists of two flips with the body in a straight position. There was a point in the execution of the skill at which the teacher wanted to make sure the student was looking at the right point on the trampoline bed at the correct moment in the skill. By getting the student to focus his attention on a specific point on the trampoline bed, the teacher was intuitively using a cognitive cue exercise called a location cue drill (Vickers, 2007, p. 168):

Teacher 2: Like on Monday for instance. That trick that he's got mental problems with it in the sense that he's scared of it. [...] [The] double layout [...]. He doesn't feel comfortable because he doesn't control [it] well ... that's why. I say "ok we'll do it once" [....]. It's just that it's nice to keep working on it because he was really stressed so I felt if he's really stressed that's time for injuries so I said "how about we do it once, I'll call it when you have to look down". (DBT 2.01)

With this process, over time, Student 2 himself learnt to call out "now" to indicate he has focused his attention on the particular point on the trampoline bed at the right moment that is critical for the correct execution of the skill:

Teacher 2: there was this one time when he landed short last week. Because he has such good spatial orientation I didn't say anything and he didn't react. So I said "now I'll tell you when to say 'now' to make it safe". And he did it good so [in the] next class we'll do it again [...] he has to learn to produce rotation to and

from the vertical and he's getting better at it. [...] The double layout is a hard-first skill. It forces him to do good technique. (DBT 2.01)

Student 2 was able to learn quickly and transfer his specialist acrobatics skills from ground tumbling and power track (with its horizontal momentum) to trampolining (with its vertical momentum). Interviews in this period also revealed how the student quickly assimilated the teacher's strategies, converting them into learning behaviour. For example, even in the first research cycle he had already formed a clear understanding of his teacher's approach to "breaking down the skill":

Student 2: If you break this trick down step by step there's actually a lot of parts involved in this trick that you have to do before you actually attempt a big trick like that. And [the teacher] doesn't skip any steps. You do this to perfection. That's when you move on [...]. [The teacher] makes sure that everything you do is safe. So safety's first. That's why he breaks everything down trick by trick, step by step. (DBS 2.02)

Student 2 also had formed an understanding of the teacher's focus on cognitive engagement: "Like [the teacher] talks a lot and really gets that trick and that skill in your head so you really think about it. And so when you think about it that's when it clicks" (DBS 2.02).

Another example of Student 2's appropriation of teaching strategies emerged in the detailed way he talked about "bandwidth feedback", the content of feedback and the timing of feedback, including non-verbal feedback like looks and gestures, and the type of "questioning" techniques. Here the student reveals his grasp of the teacher's use of "bandwidth feedback":

Student 2: [The teacher's] strategy is I would do a trick [...]. Say for instance it goes bad. [The teacher]'ll say, "do it again" first, first he'll have you attempt that trick again, do it again. And then if he sees a similar mistake then he'll try to say, "what do you think happened [...] that time?" and then he'll try to have me guess what went wrong. And then sometimes I will guess it, but if I don't guess it he'll give me little hints. He'll say "more heel drive?" or something like that (copies the teacher's gesture for more heel drive). He makes me do the trick twice to see if I correct the mistake. (DBS 2.02)

The student's "collaborative" and "participant" learning styles facilitated his fast appropriation of teaching strategies. Student 2 performed well in his December presentations in his specialist disciplines, which were diabolo (juggling discipline) and Chinese hoops (a circus discipline where the various acrobatic manoeuvres are performed while diving through hoops stacked vertically in various formations). He had substantial performing experience with the community circus company that was attached to the social circus training program where he had trained before coming to the NCS. This community circus company also periodically performed with a professional circus company.

In contrast to Student 1, Student 2 in the final interview of the first research period revealed a high level of tactical awareness in his performance of his primary disciplines:

Student 2: I'm a very visual person so I'm doing my number but I'm also concentrating on my surroundings and so I can see the looks on the people, on the other students' faces [...]. I was doing it (checking peoples' reaction) during the number [...]. It wasn't planned but [my teacher] said I should take my time [...] it's like giving me a breath. I'm relaxing at the time. I don't want to just like take my focus off. So I try to look and breathe. [...] Interviewer: That was your game plan? To do that? Student 2: Yes. To look at people and that was like also my breathing point, breathing moments. (DBS 2.02)

As with the previous case study, Teacher 2 was asked to reflect over the Christmas break on the specific aspects he wanted to work on with the student, and to select one or more cognitive weaknesses to work on with the respective cognitive triggers and Decision Training tools.

6.6 Research Cycle 1: Case Study 3

The first research cycle in Case Study 3, as in the previous two case studies, was used to assess the teacher–student interaction and particularities of the learning situation, and to give the teacher a chance to become accustomed to using some of the Decision Training tools. Due to the short-term objective of the student having to pass a second audition in order to get into the first year, this pairing was different to the other two case studies. The introduction of Decision Training interventions in Case Study 3 was affected by the tension between the short-term objective of preparing for the audition, and the objectives of the research project:

Teacher 3: Well we'll see how [Student 3] responds to all this, but plus she's under a little bit more pressure right now because we have to prepare her

audition for her first year entrance so she's already in a stressful situation, so we'll see how she reacts to all that, and we'll see how she pulls through and trains herself throughout all these stressful times. (DBT 3.01)

There was a second issue unique to Case Study 3: the problem of the lack of a shared language between teacher and student, which exacerbated the issue of communication with an already non-verbal student. There were language difficulties because Student 3 spoke English and understood only a very small amount of Russian. Teacher 3 spoke Russian and some French, and a minimal amount of English. For Teacher 3 communication with her student was a challenge:

Teacher 3: Well I decided that I am still going to continue in French and Russian [...] if there's some things she doesn't understand in French. And then I don't speak English that well, so I try a little bit English but then what I am going to do is I'm going to keep asking [her] the questions, "what is happening here?" and make [her] talk more. (DBT 3.01)

This was also a challenge for Student 3 as this exchange reveals:

Interviewer: In the interaction between you and [Teacher 3] how's that going? Student 3: It's sometimes hard.

Interviewer: In what way?

Student 3: Like the language barrier, so I'm learning Russian a little bit, like trying to get it back, but and then I don't know or understand French that much. (DBS 3.01)

In addition to these language issues in Case Study 3, the issue of a non-verbal student unused to either being asked questions, or being asked to propose solutions to problems by her teachers prior to her arrival at the school also hindered communication between the teacher and the student. These are characteristics of a student with a "dependent" (Grasha & Yarbanger, 2000) learning style.

In this first research cycle, at this point, I suggested to the teacher that she use "video feedback" as a means to communicate with the student. AFL footballer Nathan Buckley makes the point that individuals can learn new physical skills from visual information:

I've heard from our psych that 80 per cent of our group are visual learners and you can say whatever you like, but if you put a picture in front of most footballers they'll understand it a lot more easily than being spoken to. This comment reinforces that an individual can learn new information in ways other than verbalised coach instruction (Farrow, Hall & Diment, 2008).

Nathan Buckley's comments speak to the argument, that, according to Farrow et al., the majority of athletes including, I would argue, circus students also, are visual learners who "prefer to receive new information via demonstrations, video feedback, diagrams, pictures from coaching manuals or magazines, or even instructions that paint a visual image of the skill" (Farrow, Hall & Diment, 2008). In fact, both Student 2 and Student 3 referred to themselves as visual learners in interviews (DBS 2.02; DBS 3.04), and Teacher 3 also remarked on the visual perceptual preference of Student 3 (DBT 3.02).

This use of third-person video seemed to address communication problems to some extent, but the teacher felt the main issue was that the student had no movement vocabulary to refer to, and therefore was unable to link what she was seeing on video to the feel of the actions she was doing on the trapeze. This links back to some of the comments from Teacher 2 about the use of kinaesthetic training in conjunction with video feedback and *vice versa* when using these Decision Training tools. Therefore, when Teacher 3 asked the student to propose solutions while she was actually on the dance trapeze, the student had no physical reference with which to answer; when she was not looking at the movement on video she was unable to provide constructive autofeedback:

Teacher 3: But she cannot give feedback. You will ask [Student 3] a question and she will say, she will answer that everything is fine, she is satisfied, everything is correct. [...] She's visual [...]. So these days the video helps us [with] that [and] to go more on the inside. So with the video she could tell me, "Ok now my arm was not right". But if you ask her without video she cannot answer. (DBT 3.02)

By the end of the first research cycle, Teacher 3, though acknowledging video feedback as a useful tool for communicating with the student, felt she needed to modify the frequency of video viewing so as not to hold up the class, and to keep on track for the student's audition for first year:

Teacher 3: I would like to use a little less video these days because I feel when I'm showing the video it takes away time for me to spend with her. Because it takes more time but on the other hand since she's not speaking, it's good because at least we're communicating. (DBT 3.02) "Video feedback" certainly helped the student to initiate a dialogue with the teacher, even if just to identify mistakes when looking at them on the video, but as can be seen the teacher had to work hard to elicit constructive self-assessment from the student:

Teacher 3: Yes, she is visual because at the beginning I asked her, "What is it that you don't like? What is it that you see that you don't like?" And [Student 3] said, "no no it's good".

Interviewer: She was happy?

Teacher 3: And after that I asked her, "no no look carefully. The arms ... look at your leg, you are happy about everything?" And then she answered, "no I'm a little bit robotic. I can see my movement is rigid." (DBT 3.02)

When Student 3 was shown video of herself in feedback sessions using thirdperson video feedback, and in feedback sessions utilising face-to-face feedback between herself and the teacher, she commented that she looked more relaxed in the video feedback sessions because "she could see what to do" by being able to receive feedback while watching herself doing the movements on video replay. On the other hand, she reported that she looked stressed and confused when watching a video of herself and the teacher in the face-to-face feedback sessions: "it looks like I'm not understanding what [the teacher is] talking about" (DBS 3.01). Even in "video feedback" sessions, "questioning" remained difficult for Teacher 3 because Student 3 was not familiar with being asked her opinion in the training situation.

Additionally, Student 3 had no prior knowledge of her discipline and initially lacked the strength vital for aerial work. This meant Teacher 3 had to work with the student to build up both a movement vocabulary on the equipment, and the necessary strength, from scratch. This required a certain amount of continuous use of variable practice as the student would tire easily and activities needed to be changed as a result. Teacher 3 discussed the challenges of trying to develop the strength of Student 3, and that this was exacerbated by the student's lack of self-regulation in relation to doing outof-class training and conditioning, and the fact that the student was new to the sort of rigorous full-time training that happens at the NCS.

Self-training was also affected as the student had a period of illness, and another period during which she had an upper body injury. After these lay-offs, the student had to regain her strength, something she was not used to doing on her own: Teacher 3: Because what I realise this week is that we are not augmenting the strength like I was hoping to. She started very well but then she was sick. After that she had a sore back. It took her two weeks and she came back. She went back to a lower level of strength. I don't think it's bad, but what I'm observing is she is not developing individually that strength [on her own]. She's not working. She's coming to warm up [...] but she will not work on her own. She won't lift her legs, do tractions (leg raises, a key conditioning exercise for trapeze artists) and things like that. I have the intention to talk to her. Tell her that by waiting and sitting nothing will be improved. (DBT 3.02)

By the end of the first research cycle, Teacher 3 ("formal authority" and "personal model" teaching styles; Grasha & Yangarber-Hicks, (2000)) was asked to reflect on the cognitive weakness of Student 3 ("dependent" learning style (ibid.)) and to come up with a plan using the Decision Training process.

6.7 Research Cycle 1: Summary

The first research cycle allowed a general picture to be built up of the learning and teaching scenario in each case study prior to implementing a formal use of the Decision Training model in the second research cycle. This included observing the learning and teaching styles, assessing the particular challenges faced by each teacher, understanding the type of interaction between teacher and student, finding out about the objectives of teachers and students, gaining an insight into how the teachers perceived their students and *vice versa*, and beginning to develop a sense of the specific requirements of each discipline, and the different contexts in each case study.

In this period, teachers were prompted to experiment and become comfortable with some of the Step 3 Decision Training tools, and the effects of using them on the learning styles and behaviour of their students. "Video feedback" took some time to be accepted by Student 1 ("independent" learning style; Grasha & Yangarber-Hicks, 2000), who only began to want to get involved with video feedback just prior to his presentation; but proved effective as a means of communication with the quiet and reserved student ("dependent" learning style (ibid.)) in Case Study 3.

Frequent use of "variable practice" happened in all the case studies. Teacher 1 ("facilitator" teaching style; Grasha & Yangarber-Hicks, 2000) used "variable practice" in his approach to introducing a different theme into training each week. Teacher 2 ("facilitator" and "expert" teaching styles (ibid.)) had a habitual use of "variable practice" and used it extensively, only using direct linear practice when safety was an issue. Teacher 3 ("formal authority" and "personal model" teaching styles (ibid.)) used "variable practice" mainly as a result of needing to accomplish a number of things at the same time, such as building up the student's strength from scratch, gaining foundational movement vocabulary, and developing the audition act. In Case Study 3, there was also a need to change activities frequently as the student tired quickly due to lack of specific body conditioning and not being used to full-time training.

In the first research cycle, "hard first" instruction and live "modelling" was already available in the training environment in Case Study 2 as there were higher level students training at the same time in class; in Case Study 3, the teacher frequently needed to use her own live "modelling" to visually communicate with the student so that the student could connect names to unfamiliar actions.

In Case Study 1, the "facilitator" style of the teacher meant that there was already some "self-coaching" taking place in the way the student was inputting into the structure of the training in class.

In this research cycle, "bandwidth feedback" was only really explored and used successfully with Student 2 ("collaborative" and "participant" learning styles), who adapted quickly to its use. There was a dip in performance as a result of using "bandwidth feedback", as Vickers confirms will happen initially (Vickers, 2007, p. 202), but this picked up again relatively quickly as the student became more skilled in his use of self-assessment.

6.8 Chapter Summary

This chapter began with an overview of case study backgrounds. The individual backgrounds of case study participants and their teaching and learning styles, along with the specific characteristics of the circus discipline involved in each case study, were discussed.

In the second part of the chapter I tracked the lived experience of case study participants through the first research cycle of the project.

I now move to the second research cycle of the project where teachers reflected on the specific cognitive attributes they wanted to develop in their students using the full three-step Decision Training process.

Chapter 7: Research Cycle 2

7.1 Chapter Introduction

In the first research cycle, Decision Training tools were used as general teaching strategies so the teachers could gain familiarity with them. Building on this, in the second research cycle the tools were used to train a specific cognitive ability in combination with a specific cognitive trigger exercise as part of the teaching model.

In this cycle, each teacher was asked, after reflection, which cognitive weakness they wanted to focus on with their student, choosing from the seven cognitive abilities from the Decision Training model—"anticipation", "attention", "focus and concentration", "pattern recognition", "memory", "problem solving" and "decision making" (Vickers, 2007, pp. 166-167). In addition, teachers had to formulate a plan to use the full three-step Decision Training model by incorporating specific Step 2 training exercises in a performance-like situation using a specific cognitive trigger: "object", "location", "quiet eye", "reaction time", "memory", "kinaesthetic" or "self-coaching" cues (p. 168).

Finally they had to choose one, or a combination of, Step 3 Decision Training tools using specific practice design, feedback and instruction strategies with which to train the student in these training exercises (p. 169).

7.2 Case Study 1

During the December break, Teacher 1 had reflected on Student 1's school presentation. For Teacher 1, ("facilitator"; Grasha & Yangarber-Hicks, 2000), the student's main problem had been the lack of physical embodiment and flow in his performance, and his being blocked by distracting thought processes—or, as the student himself put it, "thinking, looking at me doing the act instead of being inside it" (DBS 1.02). These issues arose because of inappropriate mental processes whereby the student attached too many ideas to each movement, and this was apparent to both the teacher and the student. Therefore, the main area on which Teacher 1 decided to work was developing Student 1's cognitive skill of "focus and concentration", which he felt was weak. Vickers describes "focus and concentration" as the ability to "detect the correct cues and not be distracted by irrelevant events over an extended period of time" (Vickers, 2007. p.166). This process of selecting a cognitive weakness to train in the student is Step 1 in the Decision Training process.

The next step was to choose one or more cognitive triggers or exercises to train the cognitive skills. The teacher explored a variety of Step 2 exercises over the next two research cycles: "object", "location", "memory" and "reaction time" cues. This mix of Step 2 cognitive trigger exercises was designed to focus Student 1's ("independent" learning style; Grasha & Yangarber-Hicks, 2000) mental processes on specific tasks, and on sensations in the body, to avoid being affected by over-complicating the creative process when working on and performing his act. These mental distractions included "overthinking" each movement in compositional tasks, and being distracted by conflicting mental narratives in performance. In this second research cycle, Teacher 1 focused on cognitive trigger cues through the use of exercises such as "blind throwing" and a "virtual grid" exercise.

In Step 3, Teacher 1 was required to choose one or more of the seven Decision Training teaching tools to employ while training Student 1's identified cognitive weakness using the cognitive trigger exercises. In this instance, Teacher 1 chose to continue using "video feedback" extensively as a means of discussing with the student the outcomes of each exercise, and also to use "variable practice" and "random practice" design.

After reflecting on what cognitive skills to work on, and devising a plan of how to approach this, Teacher 1 applied these new training strategies in the second cycle.

Both the "virtual grid" and the "blind throw" exercises involve "variable practice" and "random practice" design. They replicate possible scenarios in performance and are particularly useful for juggling, where things often do not go as planned. For example, a throw with one diabolo might go too high, requiring adjustments with the other diabolos being juggled; a diabolo might be dropped, requiring the juggler to improvise to work the dropped diabolo back into the routine; or a diabolo might end up in a different plane or axis than had been anticipated, requiring on-the-spot adjustments to be made.

In the "virtual grid" exercise, the student performs different movements according to his position in a numbered "virtual grid". The grid itself could be visualised as being positioned in different planes in relation to his body, for example, on the floor, at head height or bisecting the body. This exercise was an example of an adaptation of a cognitive trigger exercise for a juggling context. How the "virtual grid" exercise worked was that the student was required to memorise (Vickers, 2007, p. 168) the numbered squares of the grid, which corresponded to different sequences of movement material. "Memory" retrieval and "reaction time" cues were triggered by the coach calling out different numbers requiring the student to respond quickly to this outside command, which triggered different movement sequences with little time available for thinking about the organisation of his actions. There were various "rules" applied; for example, calling a number required the student to recall a different learnt spatial orientation in the grid, move to a different square or jump to a different part of the sequence, while also holding in memory the different spatial orientation. In an alternative version of this exercise, the student was required to perform the same drill on the frontal plane (sagittal), with diabolo juggled in different locations on a vertical version of the grid.

This exercise addressed "focus and concentration" because it put the student in a situation where he had to screen out distractions and only respond to called-out cues within time constraints. The student's cognitive processes were employed with having to make on-the-spot decisions recalling learnt skills, switching between skills and having to respond with movement transitions from one location to another. One performance application of "virtual grid" training is a situation that every juggler faces: dropping. When juggling up to four diabolos at one time there is a high potential for a dropped diabolo. The juggler needs to be able to respond to this situation by making a number of split second decisions that involve switching skills or adapting the skill being performed, and creating on-the-spot movement transitions to recover the dropped diabolo. A creative process application of the "virtual grid" is as a tool for the generation of material for compositions. By using a random sequencing of squares and tasks associated with each square, new unforeseen combinations of skills and movements can be created. The process is videoed so these randomly generated sequences can be reconstructed and used as material in the act. Student 1 responded well to these exercises. This was an example of an analytical task matched with the student's cognitive style, which was "analytic" (Allinson & Hayes, 2012; Riding & Cheema, 1991). In devising these exercises, the teacher was able to drill "location" cues (to focus the attention on a location or target area), "reaction time" cues and "object" cues (to focus on an object).

Another drill that trained the cognitive skill of "focus and concentration" through the use of "location" and "reaction time" cues was a "blind throw" exercise in which the teacher instructed the student to look forward once the diabolo left the string in a vertical throw and only to look for the diabolo returning at the last moment just as it was coming back onto the string. This exercise was done first with either one or both eyes closed (only opening the eyes at the last moment to look for the diabolo coming back down from the height of the throw). In another version of this exercise the student was asked to call out an estimation of the height of the throw each time, testing if he could reach the same height each time without looking directly at the diabolo. The student was then able to confirm whether or not he was consistently accurate in this exercise by reviewing his actions using "video feedback". With all these different permutations, "video feedback", "variable practice" and "random practice" played vital roles in the process. These different cognitive trigger exercises were used to challenge the student by simulating possible performance-like conditions or, as Vickers terms it, "tactical whole training" (p. 164).

Another proprioception exercise that involved "random practice" was the use of an unstable surface on which the student balanced while juggling, to force him to focus on maintaining balance and location in space. In juggling, "random practice" exercises such as a "blind throw", or working on an unstable surface, can be undertaken relatively safely compared to the risks associated with attempting similar "random practice" in a more acrobatic discipline like trampolining (Case Study 2) or in an aerial discipline like trapeze (Case Study 3).

All these drills shared the objective of forcing the student to use "focus and concentration" on specific tasks, and to focus away from mental distractions in performance-like situations. Student 1, because of his "analytic" cognitive preference, seemed interested in these exercises, despite continuing to be resistant to any interventions into his own training regime and creative process.

In summary, by the end of the second research cycle, a number of training exercises targeted at getting the student to "focus and concentrate" and not be mentally distracted were applied by Teacher 1. These exercises used "variable practice" and "random practice" design as Step 3 tools within the context of Step 2 "memory retrieval" cues, "reaction time" cues, "location" cues and "object" cues, all of which are critical for a juggler. Extensive use of "video feedback" was made throughout as a means of getting around the student's resistance to teaching interventions, and to aid with communication.

7.3 Case Study 2

In the second research cycle, Teacher 2 proposed focusing on the problem of "breaking down skills". Specifically, he wanted his student to know which aspects of a skill or sequence of skills were important to pay "attention" to: for example, the push on the trampoline bed, the movement of the body in the air, the position of the head at certain key moments, and/or the location of the gaze at critical points during the movement sequence. This focus on details and preparation is a hallmark of an "expert" teaching style.

For the three-step Decision Training process, he chose "attention" as the mental ability he wanted to develop in Student 2, to counter his normal mode of "intuitive" (Felder & Silverman, 1988) execution of skills or just "going for the tricks". For Step 2, he chose visual cues such as "location" cues for gaze locations, and "kinaesthetic" cues for feeling the bed, for the correct thrust and rhythm. For Step 3, he chose "bandwidth feedback" (with "questioning"), and "video feedback". Teacher 2 proposed to continue using "variable practice" and "random practice" design and "hard first" instruction, which were already part of his teaching practice prior to the start of the study: "because acrobatics is so fast—'hard first', 'random', 'variable' is really important" (DBT 2.03).

The reason Teacher 2 chose to work with "location" cues was that he felt one of the major difficulties with the student's ability to break down the skill was a lack of awareness of where to look at different points in the action. This was a significant problem as it had the potential to lead to major injuries. Student 2 himself described this lack of attention when he recalled an incident where a skill went wrong:

Student 2: Because like most of my tricks I usually throw my head and I can fix it [if] I still have some type of heel drive. (During the trick that went wrong) I didn't have any heel drive. I just threw my head back and I'm [thinking], "ok" and once I get [...] a quarter [of a rotation] in the air I'm [thinking], "oh this is bad". [...] I'm bouncing, my last jump, I take off from the bed and directly I throw my head backwards.

Interviewer: But that's when you take off. I want you to go a second earlier when you are actually landing.

Student 2: Oh I'm still thinking, "this is a piece of cake" [...]. In the bed I'm totally fine. It's just when I leave the bed that's when everything goes wrong. Like I'm jumping, I'm jumping, I'm jumping, I'm thinking, "I have this trick, I have this trick, It's a piece of cake". And I think that was the problem. I wasn't

thinking about the trick, I was thinking more, "I have it". And I think that was the problem. (DBS 2.03)

This speaks not only to Student 2's rapidly developing self-assessment skills but also to his realisation that it is cognitive effort, and the alignment of mental and physical skills, that is required for the successful execution of motor actions. In terms of Hammond et al.'s (1987) cognitive continuum theory—which proposes "two continua: one for cognitive mode, ranging from analysis at one end to intuition at the other; one for tasks, ranging from the analysis-inducing to the intuition-inducing"—this was an example of an "analysis-inducing" task used to promote an "analytical" cognitive behaviour (Allinson & Hayes, 2012, p. 3). As a result of this, the student, who had a preferred cognitive style that was "intuitive", began to develop more "analytical" learning strategies (ibid.).

As the teacher notes, acrobats respond to visual cues, so if the head position is wrong the acrobat is going to be giving his "attention" to the wrong visual cue or to no visual cue at all:

his head position is a weakness for him, he knows it but he needs to fix it. His visual cue plays a major factor because you react to what you see so if he is looking at the right place obviously he's going to have better result. (DBT 2.03)

A "location" cue exercise that Teacher 2 applied in relation to this problem of attention to correct visual cues was called "take a picture", whereby the teacher asks the student to take a picture in their mind (also sometimes accompanied by a physical gesture of taking a picture) of the location he was supposed to be looking at during the skill. This gave the teacher an idea of when the student was directing his "attention" at the target location. After completing the exercise, the teacher then used "bandwidth feedback" and "questioning" to determine when the student was looking at a specific location: "Sometimes I will say 'Where do you have to look?' [...] once he knows what to do" (DBT 2.01). This "location cue" exercise gave the teacher useful information about whether the student had correctly self-assessed his enactment of the skill.

Working with Teacher 2, I proposed a particular use of "video feedback" and video "modelling", combining third-person video and first-person video feedback to approach the problems with the student's head position, and lack of "attention" to the correct visual cues on take-off and during the trick. The teacher suggested that we try this strategy with Student 2 when he was working on an important trick called a "back

cruise duck under" that was essential for the student to master if he was to progress to more complex skills.

First- and third-person video footage was taken of Student 2, and of a more advanced student in the class. Both performed the trick and then the video footage from both students was compared. Teacher 2 began by showing Student 2 the third-person video of the more advanced student executing the full twisting back somersault, shot from the side of the trampoline.

This Decision Training tool—video "modelling"—is effective in exposing the student to the complexity of the disciplinary practice before the actual skills have been acquired. The third-person video of the more advanced student showed Student 2 an example of someone doing the trick with the correct head alignment and gaze location. These videos were viewed at both normal speed and in slow motion.



Figure 8. First-person footage using head-mounted camera. This still is from the top of the bounce.

This "modelling" process clearly revealed that the alignment of the head and the body were different when the trick was performed by the two students. The more advanced student's head and body were straighter, he used his arms more effectively and, specifically, his head was in alignment with his body. By viewing the two, Student 2 could clearly see that he was bending his body more, his head was out of alignment, he was throwing his head back as he went into the jump and he was not looking at the correct "location" during the action of the trick.

First-person footage was shot by a Go Pro camera which was attached to the head of Student 2 to show exactly what he was looking at and the "location" of his gaze in the room at each stage of the trick (see *Figure 8*).

I then attached the Go Pro to the head of the more advanced student doing the same skill. When playing back the two pieces of footage side by side even at normal speed, Student 2 immediately saw and kinaesthetically "felt" the technical errors he was making in the performance of the trick.

This is Student 2 talking about the effects of this process comparing point-ofview footage of correct spotting of the bed compared to his own incorrect spotting of the bed. This use of video "modelling" enabled him to work to correct the skill in a more informed way:

Student 2: We saw [the other student] looking at the bed, we saw him cruise (a "cruise" is 180 degrees of backwards rotation with 180 degrees of twist from prone position to prone position) looking at the bed, tuck under looking at the bed. And for me (i.e. Student 2's point-of-view footage) you saw the beginning, [you saw me looking at] the windows, you saw me looking at [...] the floor (here he is referring to his gaze location being the floor of the studio to one side of the trampoline instead of the trampoline bed where he was supposed to be looking) and then [looking at] the bed, and then I flipped, and then [looking at] the bed again. (DBS 2.03)

This exercise also reveals the "quiet eye" in action. The "quiet eye," is the longer than normal fixation gaze that Vickers identifies as being present in the gaze characteristics of elite athletes (Vickers, 2007, p. 11). The more advanced gymnast is able to focus earlier and longer on the correct target than is the less advanced student. All this is clearly visible when examining the first-person video footage of these two versions of the full twisting back somersault. A head-mounted Go Pro is not as sophisticated as Vickers' use of mobile eye trackers but it achieves the same purpose of drawing attention to where and for how long the student is directing his focus. Later, talking about this moment in retrospect, Student 2 referred to this discovery of the importance of the "quiet eye" and the "location" of his gaze: "Back then I couldn't just attempt that trick like that because I didn't have no sight of what I was seeing. I couldn't see anything" (DBS 2.02).

Student 2 talked about how the point-of-view first-person video footage really helped him as a learning tool to work towards controlling what could have become a permanent error in his trampolining technique:

Student 2: [Examining the video] helped me try to keep my head forward and the twist and things like that yesterday. It also tells me that when I'm throwing my head back [...] you can clearly see the camera (first-person camera) shoot straight back in the flip where you [are not] supposed to do it and so that's pretty cool, and like for a split second you can see what you did wrong. (DBS 2.01)

This video "modelling" exercise was an example of matching a learning task to the predominant visual learning preference of high-level athletes who have, as Faubert reports, "extraordinary skills for rapidly learning unpredictable, complex dynamic visual scenes" (2013). In addition, this getting "inside the trick" that first-person video footage offers is a way in which an individual can experience his or her pathway in space in relation to the body, setting up a predominantly visual—and to a lesser extent a kinaesthetic—response. Slowing down the footage helps to further direct the student's attention to breaking down the skill.

I observed that Teacher 2 did not always explain to Student 2 the purpose of the different exercises he introduced into the class, instead asking the student to work out for himself why they were drilling certain things. My understanding of why Teacher 2 put the student in this situation was that it served to prompt the cognitive effort that Vickers talks about as a prime focus of Decision Training. Cognitive effort is defined as the mental work that "leads to high levels of decision-making ... anticipation, planning, regulation and interpretation of motor performance" (Lee et al., 1994, p. 328-329). As Vickers notes, "Decision Training incorporates higher levels of cognitive effort into the practice environment at the same time preserving or increasing the amount of physiological, technical, and tactical training that occurs. Permanent gains are only achieved when cognitive and physical training occur in concert" (2007, p. 165).

Below is an example of this prompting of cognitive effort that is central to the Decision Training process. Student 2 tells us in detail how he needs to think in order to do a particular trick. He had injured his shoulder attempting this same trick previously:

Interviewer: So now when you do that same trick. What are you thinking on that last jump?

Student 2: I'm thinking about setting, straight body before. I try to not to throw my head back anymore. I think about like step by step. And right now I think I

do that trick really really well now. I don't think about tuck, cruise, duck under. I think about setting, heel drive, half turn, cruise, front tuck. (As he talks he demonstrates physically "breaking down the skill" into all the component steps of the movement sequence). Like I can see everything. It's like one, two, three, four (demonstrates with his hand the different locations he looks at sequentially). It's four steps for me and I have four spots where I look. (DBS 2.03)

This response showed us how Student 2 was beginning to learn that his habitual "intuitive" approach (Allinson & Hayes, 2002) was not sufficient for accurate and successful execution of complex skills. He was beginning to learn that cognitively engaging with breaking down each stage of the complex movements was more productive, and safer.

The other aspect of directing "attention" to breaking down the skill involved Student 2's initial lack of awareness of "kinaesthetic" cues, such as the feel of the trampoline bed. In the first research cycle, the teacher had introduced a number of exercises to train attention to "kinaesthetic" cues; for example, the correct "feel" of the trampoline bed under the feet on take-off. If the student pushes into the bed incorrectly, his take-off into the trick will be affected.

In the following quote, Student 2 recalls one of Teacher 2's "kinaesthetic" cue exercises designed to practice what is called a "heel drive" to generate the correct momentum and rotation in the air. In the heel drive action, the legs need to be perfectly straight so the whole leg is used and not just the feet:

Student 2: I remember one specific class where I didn't drive my heels, which is really bad [and causes] under-rotating. And so he took me off the trampoline. Told me, "lay on the floor". I did that and then he had me kick a ball. And then he told me, "kick" [...] he said, "kick the ball". (Here the exercise is to try to kick a large ball backwards with both heels with the legs straight while lying in a prone position on the floor). And I couldn't kick the ball [...]. He was trying to get me to use [...] my whole body from my finger tips to my toes and that helps. (DBS 2.03)

Initially the student was not able to kick the ball because he was using the wrong action on the trampoline. Once the student had got the feel of the correct action he was able to go back onto the trampoline and perform the correct heel drive for the trick. Getting Student 2 to direct his attention to the feel of the correct technique through the use of a "kinaesthetic" cue, and a teaching aid like the ball, really helped him because

he could then recreate that feeling the next time the heel drive was required for that specific skill on the trampoline:

Student 2: After that I felt like a lot more confident [...] doing that trick and I just knew what was the problem, and what was the cause of me not making the trick all the way through successfully. And so after that I just felt [...] a lot more confident. (DBS 2.03)

Another "kinaesthetic" cue exercise used by Teacher 2 was the feel of the rhythm of the trampoline bed: the teacher felt the student did not have a natural feel for the timing of doing the acrobatic skills sequentially with a minimum of free bounces between skills. The teacher referred to this exercise as "swing time", which is an action, skill or trick performed immediately after another movement with just one free bounce in between. This is important because in a trampoline act the less time spent doing preparatory bounces the better. Tricks should be done on consecutive bounces to make what is considered a high-quality act:

Teacher 2: The other weak spot [for] me is just time, is like the feeling of the trampoline [...]. Swing time is you keep connecting skills [...] you do lots of little routines [...]. You get to feel the bed and your body learns to adapt [when] you're short or over. It forces you to do it. Again, you could explain (to the student) but [they] have to feel it. (DBT 2.01)

In summary, by the end of the second research cycle much had been achieved through precise use of a Decision Training plan with a receptive and responsive student displaying characteristics of "participant" and "collaborative" (Grasha & Yarbanger, 2000) learning styles. Having identified the central decision he wanted to be trained in the student as "attention" to "breaking down skills" using "visual" and "kinaesthetic" cues, Teacher 2, using a combination of "facilitator" and "expert" teaching styles (ibid.), had implemented specific drills to work with a broad combination of Decision Training tools including "variable practice", "random practice", "bandwidth feedback", "questioning", "hard-first instruction with modelling" and an innovative use of thirdand first-person "video feedback".

7.4 Case Study 3

In the reflection stage in preparation for the second action research cycle, Teacher 3 identified a cognitive weakness in Student 3's "decision making" abilities; in other words, "the ability to make effective decisions choosing between a set of alternatives" (Vickers, 2007, p. 167). Teacher 3 reported that with Student 3, "we have someone who has no desire to make decisions" (DBT 3.03).

Vickers (2007) states that the cognitive skill of "decision making [...] draws on all the other perceptual and cognitive skills" (p. 167), including "anticipation", "attention", "focus and concentration", "memory retrieval", "pattern recognition" and "problem solving" (defined as an ability to reach a stated goal when no obvious solution is available).

Teacher 3 reported that in an ideal world, "The movements and the memory accumulate and then [students] can use whatever movements [they choose]" (DBT 3.01), but when there is a lack of memory retrieval skills, the student does not build a movement vocabulary; rather they, "don't accumulate a base of movements" and just "repeat movements that they already know … What happens is from one class to the next they don't remember any of the movements" (DBT 3.01).

With respect to "focus and concentration", Student 3 found it difficult to screen out mental distractions and concentrate on working with the trapeze as a "partner" rather than as a "disturbing" object. As the teacher reported, "the trapeze remains a barrier instead of a partner, it's like a an object that disturbs instead of dancing with it [...] It felt like the trapeze was bothering her because she needs to move but she is not used to having something beside her" (DBT 3.01).

Teacher 3 also noted that Student 3 demonstrated a lack of awareness of the "kinaesthetic" sensations in her body and their relationship with the success or failure of movements, and also proprioception issues such as getting used to the feeling of being upside down and working at height: "She doesn't have it in her body. So she cannot feel what she did right [or] what she did wrong" (DBT 3.02). Student 3 herself alluded to being "freaked out" when she was high off the ground in her description of a rare occasion on which she self-trained (DBS 3.03).

Again, in this third case study, it is apparent that the problem preventing improvement is not so much a physical problem as a cognitive one. In this interview, Teacher 3 ("formal authority" and "personal model" teaching styles; Grasha & Yangarber-Hicks, 2000) frames this in terms of "emotion and character" as these are terms used by traditional-style teachers; although one could equally frame it in terms of learning style theory, with the student having a "dependent" (ibid.) learning style relying on the teacher for direction and motivation, and—as Vickers describes it in terms of Decision Training—a lack of cognitive effort (Vickers, 2007). Of the three case study students, Student 3 had the lowest level of self-regulation and self-efficacy, and this was exhibited in many aspects of her behaviour. For example, in contrast to the other more intrinsically motivated students, Student 3 would not arrive early to class and be already warming up on her own before Teacher 3 arrived. She did not take the initiative to train regularly in her free time or take time to become familiar with the dance trapeze, an apparatus she had never encountered before, and did not spend time experimenting with compositions or improvising with the apparatus.

The numerous spatial and dynamic combinations that are possible with dance trapeze means the student must be not only open to experimenting to find new pathways for their body with the apparatus and new ways of moving the apparatus through the space, but also able to make the compositional decisions that are required when choosing which movements to use, and in what sequence the movements should be arranged in a routine. Improvising with the apparatus to develop a personal unique style is therefore a key skill, and I observed that Student 3 was very hesitant when doing improvisational exercises in the class. Talking about the student's lack of comfort dancing with the trapeze, Teacher 3 noted that:

there are some students that take to these exercises right away and there are others who don't have a big movement vocabulary that dance around the trapeze and once they stand in front of it, it becomes like a mental block that happens so there's no notion of the object dancing with you. (DBT 3.01)

Teacher 3 felt that the student, coming from a direct training background, was "too passive" (DBT 3.02), expecting that all the decisions would be made for her, reiterating the notion of the student's "dependent" learning style (Grasha & Yarbanger, 2000). Therefore, for Step 2 of the Decision Training process, the teacher decided to use "self-coaching" cue exercises, such as setting the student exercises that required her to begin to propose and develop compositional elements for her dance trapeze routine, to prompt her to become more independent. This was mainly done in the form of setting the student small self-contained tasks such as coming up with her own transitions between learnt movements. The teacher also used "kinaesthetic" cue exercises to get the student used to things that were unfamiliar kinaesthetically, such as the spatial orientation of the body in dance trapeze movement; being upside down in the air; and being comfortable with the feel of the trapeze itself.

For the third step in the Decision Training process, Teacher 3 chose to use "variable practice" and "random practice" in the form of structured improvisation, and to continue to use "video feedback". In class there was also extensive use of live "modelling" with the teacher demonstrating, and also using "questioning"; but this was often used in a more directed way than is habitually used in Decision Training.

In a performing arts context, structured improvisation, which is a form of "variable practice" mixed with "random practice", is done within certain parameters. For example, Teacher 3 asked Student 3 to begin by working with the trapeze bar low to the ground. She felt the student, with her dance background, would find it more comfortable to improvise with the trapeze bar at a low height than with it moving up and down. Because "bandwidth feedback" was clearly not working due to the non-verbal and dependent preferred learning style of the student, Teacher 3 focused on guided questioning, particularly in combination with viewing the video.

Teacher 3's perception of why "bandwidth feedback" was not working was that the student did not have any foundational knowledge of the apparatus, and therefore no movement vocabulary as a point of reference. This prompted discussion about the introduction of "bandwidth feedback" with a student in a new discipline. The teacher was reluctant to use "bandwidth feedback" until the student had attained sufficient movement vocabulary and familiarity with the apparatus. However, in focus group meetings an alternative view was expressed, which was that a teacher experienced in the use of Decision Training might be able to use "bandwidth feedback" even when the student has only acquired a small amount of knowledge; that is, the "band" in which direct and immediate feedback is reduced can be quite narrow, reflecting the small amount of movement knowledge (FG 1).

Teacher 3 was herself able to model many of the skills and sequences on the dance trapeze, and she used this tool of live "modelling" frequently when she felt the student was not able to visualise the movement, or recall the movement from memory. This use of "modelling" by the teacher is a hallmark of the "personal model" teaching style (Grasha & Yangarber-Hicks, 2000). As the student reported, "Because I'm a visual learner so I would have to [see it]. And if it's something I don't get [Teacher 3] would have to do it. And it helps me a lot" (DBS 3.04). Teacher 3 also used "modelling" frequently to demonstrate aesthetic issues such as line and length, and position of the head, arms and so forth.

By the end of the second research cycle the issue of a lack of communication because of language differences remained a problem but this had been alleviated somewhat by the use of "video feedback". Decision Training was reduced in the later part of the second research cycle because of the student's upcoming audition. In that period, the teacher had felt slowed down by the research process (in line with research previously discussed that reported the greater efficacy of direct teaching for achieving short-term goals), and because of an audition deadline approaching, requested that the focus on Decision Training interventions be reduced so she could concentrate on getting the student ready for the audition.

7.5 Chapter Summary

The second research cycle allowed teachers to reflect on the general picture they had built up of the learning and teaching scenario they were working with, and on the use of Decision Training Step 3 tools in the first research cycle before they implemented a full three-step Decision Training plan.

Teachers decided on the cognitive ability they viewed as a weakness in their student, devised exercises to train the cognitive weakness, and chose which practice design, feedback and instructional tools they would use. This constitutes the planning stage of the action research cycle (Koshy, 2010, p. 5).

Then, based on their reflection and planning, the teachers implemented their Decision Training plan, which constitutes the action phase of the action research cycle (Koshy, 2010, p. 5). In Case Study 1, the teacher focused on "focus and concentration" targeted on the student's propensity to be mentally distracted by overthinking in creative process and performance contexts. Teacher 1 approached this by devising Step 2 exercises that prompted the student to focus on analytical tasks in the form of "object", "location", "memory retrieval" and "reaction time" drills using "video feedback", "variable practice" and "random practice" design. These tasks matched the student's "analytic" cognitive style. The student's "independent" learning style created some challenges for the implementation of Decision Training interventions.

In Case Study 2 the teacher focused on "attention", targeting the need for the student to be aware of the component parts of skills to perform them safely with good form. Step 2 exercises concentrated on visual cues such as "location" and "quiet eye" exercises, and "kinaesthetic cue" exercises for the correct feel of the trampoline bed. For the Step 3 tools, the teacher chose "bandwidth feedback", which he used with "questioning" and "video feedback" in the form of first-person "video feedback" using a head-mounted camera; third-person "video feedback" was also used. There was also a high volume of live "modelling" used due to the presence of other higher level students

in the class. Teacher 2 continued using "variable practice" and "random practice" design and "hard first" instruction, which he had used in the first research cycle. In this research cycle there was evidence of the student's "collaborative" and "participant" learning styles in the manner in which he responded to teaching interventions—at times showing that he was adopting more "analytic" approaches to problem solving than his habitual "intuitive" cognitive style (Allinson & Hayes, 2002).

In research cycle 2, Teacher 3 focused on "decision making", targeting Student 3's lack of skills in this area. For Step 2 of her Decision Training plan, the teacher chose "self-coaching" cue exercises that required the student to propose and develop compositional elements for her dance trapeze routine, and "kinaesthetic" cue exercises to get the student to become more comfortable with the feel of the trapeze. For Step 3, the Teacher 3 chose "variable practice" and "random practice" in the form of structured improvisation, and continued the use "video feedback" from the first research cycle. In class there was also extensive use of live "modelling" with the teacher demonstrating. Challenges were spoken language issues and the student's habitual "dependent" (Grasha & Yarbanger, 2000) and "non-verbal" (Felder & Silverman, 1988) learning styles, which made the use of any "bandwidth feedback" difficult for the teacher.

Chapter 8: Research Cycle 3

8.1 Chapter Introduction

In the final research cycle, research cycle 3, teachers adapted or refined existing plans, or worked on new Decision Training plans. By this stage, teachers and students had been exposed to one research cycle using full Decision Training plans. Teachers were able to reflect on what was happening with these plans and then decide whether to continue, modify or develop new interventions in the planning stage. This cycle culminated in a final interview and focus group meeting with the teachers, and also a final interview with each student to ascertain the effect of the research on the learning and teaching experience of case study participants.

8.2 Case Study 1

In the third research cycle, Teacher 1 wanted to continue to work on the Step 1 cognitive ability of "focus and concentration", but in Step 2 to change the focus to "kinaesthetic" cues—that is, the feeling of flow of movement in the body—and to continue using the Step 3 teaching tools of "variable practice" and "random practice" design, and "video feedback".

In the reflection stage at the end of the second research cycle, I proposed that the teacher use a series of "energy ball" exercises that I had used extensively in dance classes as a way for the student to track sensations through the body, thereby developing the student's kinaesthetic sensory skills. These exercises focus the student's attention on the flow of movement in the body by imagining muscular flow as an embodied moving entity in the form of an imagined ball of energy. Teacher 1 was interested and modified this exercise to suit the juggling context. He created a series of energy ball structured improvisation exercises to drill the student using "kinaesthetic" cues and other exercises to free up movement. This was an example of an "intuitive-inducing" cognitive style task, designed to promote "wholistic" rather than "analytic" cognitive modes (Allinson & Hayes, 2012).

These improvisation exercises included various prompts such as the random use of different music, different visualisations of movement flow in the body, and other sensory improvisations such as visualising colours. Student 1 was required to "move" an imagined or "virtual" energy ball around his body while in contact and not in contact with a juggling object. In this specific instance, the energy ball exercise was used to focus the student's "attention" on the flow of movement inside the body and the relationship of the flow of movement in the body with the juggling object:

Teacher 1: To move the energy ball from the object (referring to the juggling object such as a club, ball or diabolo). If you receive it, if you catch the object, the energy ball [will] go through the body into the ground and after that come back to the object and [then] throw again. (DBT 1.03)

The teacher worked with music that was played randomly, requiring the student to respond with improvised movement while retaining attention on the energy ball and the relationship of the body to object tasks. Teacher 1 used "video feedback" extensively, replaying the video immediately after the exercise and then asking the student to reflect on what he saw in the video in relation to what he felt kinaesthetically doing the exercises. Another student from the class was also involved in these exercises but I did not observe Student 1 initiate any interactions with the other student during the exercises ("independent" learning style).

In interviews, Student 1's recall of these improvisation exercises was quite accurate. Here, he is commenting on the improvisation with music exercise:

Student 1: [Teacher 1] wanted us to focus on one part of [our] body every time the music changed to see what [is] the difference when we start from the hand [or] when we start from here (points to his stomach), or if we take an extremity or something with our torso. Also he wanted us to every time the music changes, [in] the last improv[isation], I think, he wanted us to also think about the colour, different colours with different parts of the body. (DBS 1.03)

Also the student had some understanding of the objective of these exercises: Student 1: To put more consciousness on things we do not really think about. Because we are used to moving or to do things with the object but [the idea was] to really associate [with] the body and to incorporate the object to better understand what we can do with that. (DBS 1.03)

This observation draws attention to the fact that most jugglers either move their body or they move the juggling object—very few are able to seamlessly move their body and the juggling object at the same time. One example of a juggler who is able to do this is NCS graduate Jimmy Gonzalez (Gonzalez, 2015), who won a gold medal at the 36th *Festival Mondial du Cirque de Demain* in 2015 in Paris, for his act involving a seamless mix of traditional and contact juggling. Although Student 1 had some understanding of the objectives of the exercises, it appeared he did not understand the teacher's motives, and was critical of their introduction into the training program:

Student 1: For me I was not really happy or very enthusiastic with these exercises. I didn't find it appropriate in the training I'm doing here. It's the kind of movement [that needs] really big researches, you could spend a life on [it] [...]. For me it was too much to be spend[ing] two hours on Thursday to [do] that and it was frustrating because it's not [possible in] two hours a week [...] [to] really [get] something. (DBS 1.03)

When it was reported to Teacher 1 that Student 1 did not understand why these exercises had been introduced into the training program, the teacher replied, "I don't know if he doesn't understand or he doesn't want to understand. I think he chooses to not understand" (DBT 1.03). This speaks to the "independent" learning style of the student; that is, preferring "to learn the content that they feel is important" (Grasha & Yarbanger, 2000, p. 5).

The teacher's use of the "energy ball" exercise was an adaptation of a "kinaesthetic" cue exercise addressing "focus and concentration". It appeared that these exercises were resisted by the student not only because they were tasks that ran counter to his preferred "analytical" cognitive style (Allinson & Hayes, 2012, p. 5), but also because of some perception issues. These revolved around the student's perception of the teacher's expertise to teach classes based on what the student regarded were "dance improvisation" exercises. The student's resistance took the form of asking the teacher to shorten the time spent on the exercises as it was taking time away from other things the student wanted to work on. The student's lack of commitment to the improvisation exercises understandably frustrated the teacher:

Teacher 1: I observed that the week before during the improvisation in the movement. I didn't feel his [commitment]. He did the exercise to do the exercise but, he told me this [...], "Ok I already did that and I don't have anything to learn [from] that. You're not a dance teacher and I don't have anything to learn." I was disappointed [about] the attitude: "I don't have anything [to learn]. I did already that". (DBT 1.03)

Student 1 reiterated his perception of Teacher 1 during these movement improvisation exercises and his frustration with the time it was taking away from things he wanted to work on independently: "I would prefer if he [Teacher 1] had skills in dance, [a] dance teacher or impro movement teacher" (DBS 1.03).

There appeared to be something deeper underlying these reflections. Teacher 1 reported that shortly after starting the improvisation exercises, he had a "big discussion" with the student:

Teacher 1: He [came] to me and said, "I want to speak to you. It's [been] one week that I want[ed] to speak to you. I want to [...] speak about a few points". I sat down and I listen[ed] to him and he [spoke to] me [about] a lot of things about the class, about his position in the school, about his personal life. It was a big *remise en question* (questioning everything) for him in all his life, not only in the school but [beyond that] when you *sauver des points* (reflect on everything) in every part of your life. (DBS 1.03)

The teacher reported that the student questioned, "My teaching, the fact that I wasn't a diabolist, the fact that I wasn't an artist. He wants more autonomy" (DBT 1.03).

The result was that, although Student 1 could see the potential benefits of these "kinaesthetic" exercises, he was frustrated at the time these exercises were taking away from his training, or as he termed it "my things":

Student 1: And I still think that it would be a good thing for me to do this work (the movement improvisation exercises). I am interested in doing that but really it's better for me to do just warm up with that and to do something else after. Because I was getting frustrated because [...] I do not feel like I'm going really somewhere when I improv[ise] for two hours and after[wards] I just have not [enough time to] work on my things. (DBS 1.03)

Student 1 also referred to the timing and the amount of feedback being given to him: Student 1: [Teacher 1] has lots of ideas [...]. I'm doing one exercise or I'm just working on my own thinking about three things at the same time. And then he has me [work on] another thing that breaks what I'm working on, and always I never [have] the time to really build something so it's very frustrating [...]. I'm always working on something. I am thinking about something. Sometimes I [think], "oh I just hope he's not going to tell me something right now because I want to finish my thing", before [I have to try] to integrate a new tool he's going to give me. So often it's just a problem of [the amount of] [...] feedback he gives me. (DBS 1.03) However, because Teacher 1 used a "facilitator" teaching approach with this student, the student was able to discuss his concerns with the teacher and, in response, the teacher adjusted the length of time spent on the improvisation exercises so the student would have more time to spend on his own work. This is an example of the teacher using a Decision Training "self-coaching" task; that is, allowing the student to suggest a solution to a training problem, and then responding to it (Vickers, 2007, p. 169). By the end of this third research cycle it was clear that the "kinaesthetic" exercises used by the teacher in this final cycle had met with some resistance from the student, but that a compromise had been arrived at in terms of the amount of time spent on them.¹

8.3 Case Study 2

In the third research cycle, Teacher 2 continued working with "attention" focused on "breaking down skills" through the use of visual ("location" and "quiet eye" cues) and "kinaesthetic" cues. As Student 2 ("participant" and "collaborative" learning styles; Grasha & Yangarber-Hicks, 2000) was building skills quickly and adopting teaching strategies well, Teacher 2 increased the use of other cognitive cues exercises using "memory" retrieval and "reaction time" cues. The teacher continued using a mix of "variable practice" and "random practice" design, "bandwidth feedback", "questioning" and "video feedback" delivery, and "hard-first instruction with modelling" instruction.

This Decision Training intervention, focused on "attention" to "breaking down skills", proved very successful with Student 2 who was adopting new learning strategies and, as a result, was transitioning from an intuitive learner to a more "analytical" one (Allinson & Hayes, 2012).

In this last research period, the teacher used "hard first" instruction, "random practice" and "variable practice" in different ways. One of Teacher 2's "reaction time"

¹ From my observations, these "kinaesthetic" exercises seemed an innovative approach to the "focus and concentration" problem being tackled by the teacher. The use of "variable practice" and "random practice" with these "kinaesthetic" exercises did eventually have some influence on the student's creative process, such as the student beginning to use "variable practice" and "random practice" elements in his creative process, such as the use of "cut-up" composition technique. This had the result of loosening up his habitually analytical creative process by allowing random permutations of the structure of his act. By the self-introduction of chance procedures using "cut-ups" to reorganise the structure of his compositions, the student was beginning to absorb and apply an adaptation of "variable practice" and "random practice".

cue exercises using "random" and "hard-first instruction" strategies was to prompt the student to go into the trick even if he was not completely ready for its execution. This was done with due consideration of safety parameters, in that the teacher was confident the student had enough spatial awareness to either pull out of the trick if it was going wrong or adjust it to make a safe landing:

Teacher 2: [I say], "Ok I think it's safe to do it" ... so I do all the progressions and I say, "let's do it once or twice so you get the feel of the skill". So my job and my responsibility is to ensure that he's going to be safe no matter what. I've got to see that his judgement is right, his reaction time is right, he does the right actions when he is out of his comfort zone, or he is in trouble. (DBT 2.03)

"Hard-first instruction" exercises like these prepare the student cognitively for what they are going to do in the future in performance, even if they are physically not skilled to do it well as yet.

One of Teacher 2's "memory" cue exercises that was used with "random practice" is what is called an "add-on game", or "in French, *charade*, in English, *add-on games*, [...] so you're having fun, you work on your brain because you have to memorise stuff" (DBT 2.03). In pairs, one student will execute a series of skills or tricks and then add on a new one without the other student knowing what it will be. Then the second student repeats the sequence with the add-on, and then adds a new trick at the end. The first student then goes back on the trampoline performs the sequence with an additional add-on and so on.

Teacher 2 also used a combination of "random practice" and "variable practice", where the student is prompted to take off into the trick even if they want to take an extra preparatory bounce. This exercise is called "swing time", and is a series of skills or tricks performed in succession with only one free bounce in between each. It is used as a preparation for a competitive routine where one aerial trampoline skill leads directly into the next without a preparatory bounce in between, so that skills are done consecutively using the rhythm of the trampoline. This type of "react and go" cue in the "swing time" exercise was designed to stop the student from settling into a habitual pattern of putting extra free bounces between tricks, by demonstrating to the student that he could do the tricks earlier and with less preparation and build-up of bounces. The teacher commented on this: "Another thing I train them to do which is part of 'variable' but is also 'random' is [...] when they are not in control I am asking them to take off anyway [so] they learn to adapt" (DBT 2.03).

In this research cycle, Teacher 2 also wanted to focus on aesthetic form. Student 2 had come from a community circus/social circus background where involvement and working with others is the major focus. Aesthetic form is not usually a primary focus of training in community circus. One of the NCS's objectives is to develop circus performers with a high level of aesthetic form, which, in an acrobatic discipline means that the performer needs a base that is recognised as being "correct" in terms of aesthetic appearance. For this, Teacher 2 opted to use "modelling", both live (using other more advanced "classically trained gymnasts" in the class) and with video of elite world-class trampolinists.

With live "modelling", Teacher 2 had the other two, more advanced students perform a specific trick before the student attempted it. With video "modelling", Teacher 2 would film both the more advanced students and Student 2, and then ask Student 2 to watch these videos and compare them to a video of a world champion trampolinist: "for aesthetics 'modelling' will go a long way […] he has to watch himself more often […] Because then he's going to look at himself [and] look at the best one" (DBT 2.03).

Teacher 2 made the actual process of reviewing video models and comparing them to videos of the student's own actions a "self-coaching" exercise to be done outside of class using the resources of the school's video library and the internet. This was not only because there were time limitations in terms of the face-to face time being only two hours a week, but also because the teacher felt that working outside of class would help the student transfer this analysis approach from a class activity to a selfassessment activity. This was an example of Grasha and Yangarber-Hick's "facilitator" teaching style, where the "Overall goal is to develop in students the capacity for independent action, initiative, and responsibility" (2000, p. 5).

In this "self-coaching" exercise, Student 2 was prompted by the teacher to ask himself what was the difference between the different video models, and what would be the solution to addressing the difference between them and his own performance of the same tricks. As Teacher 2 remarked, Student 2 would find the solution through comparing the models; for example, "This is the difference—I want it to be better so I have to put my legs straight" (DBT 2.03). The teacher alluded to the fact that many teachers are resistant to stopping in class to watch video models because they feel it slows the class down: Teacher 2: Yes, videos of somebody else. Someone more advanced as [a] model. I would be the first one to say it's under-used in this school. Because we have the impression it's a waste of time. We want to maximise [the time] as far as motor exercises go. But [...] video is very useful but outside the class. (FG4)

In asking the student to watch videos of an elite-level Chinese trampolinist the teacher made it clear that his goal with video "modelling" instruction in this instance was not for the student to replicate the athlete's performance but, rather, to become aware of what elite-level trampoline performance is and to use that awareness as a reference point:

Teacher 2: I want him to have a reference [...] to know what is really worldclass performance [...]. You cannot try to do something perfect if you don't have an idea [of] what perfection is. That was my goal. [...] At least he knows what it looks like and [that] it is possible to do it with training. (DBT 2.04)

Student 2 recalled his experience watching Dong, an elite Chinese trampolinist, world champion and Olympic gold medallist: "So I said, 'that was perfect' because of the tricks he did. They were really, really big hard high-level skills and it was really clean and he was really controlled" (DBS 2.03). Student 2's detailed description of Dong Dong's trampoline performance shows how his analytical skills had developed through the course of the research project:

Student 2: He was clean, like lines, and every flip you can see that flip, you can see that position. He held that position in that flip perfectly. He kicked out at the right time and you can see his focus was always on the bed. You could see him rise for a flip, you could see him up, he'll turn in the right spot and also he didn't drift like I do back and forward towards the edge. He stayed in the square. (DBT 2.03)

Student 2 also stated that there was something "perfect" in the athlete's form, which shows how video "modelling" of elite athletes can help to establish aesthetic and technical benchmarks (DBS 2.03). In addition to Student 2 gaining an awareness of his own mistakes through watching videos of himself, video "modelling" then helped the student to compare his performance with one in which there was an absence of those mistakes:

Student 2: I was looking at all the things that [Teacher 2] told me that I do wrong, and I was trying to see if he (the Chinese gymnast Dong Dong) would do any of those things. [...] I don't know a lot about high-level skills and

cleanliness [of line and shape] in trampoline but I do know about the mistakes because I make a lot. And I didn't find any mistakes that Ding Ding [sic] made. (DBS 2.03)

Through watching the videos of this world champion trampolinist, Student 2 developed a clear mental picture of what constitutes the ideal aesthetics of trampolining in terms of bodylines:

Interviewer: So when you talk about line with him what are you talking in terms of?

Student 2: His lines, his body alignment and everything was [...] perfect. The legs were straight, toes were pointed. Everything's in line with the whole leg and his arms are straight to the fingertip. Like he'd go for a pike and you just see this position (demonstrates a pike position) and then kick out. (DBS 2.03)

By the end of the final research cycle it was evident that Student 2 was becoming increasingly "analytical" through exposure to Teacher 2's use of Decision Training. Teacher 2 was able to move from the simple idea of "breaking down skills" in the first research cycle to working on specific habits of the student such as not attending to "visual" and "kinaesthetic" cues, in the second research cycle, to the more complex notion of aesthetic awareness of correct form in the third research cycle. Through this process the student had become less intuitive and reckless with his approach to performing skills on the trampoline, and increasingly more analytical and aware of how to safely perform skills, as he became more aware of all the technical components of each.

8.4 Case Study 3

By this time, with the third research cycle, Student 3 had already taken the audition, and performed well (she subsequently was offered a place in the first year of the main program). This relieved some of the pressure on the teacher to achieve short-term positive results. Therefore, in this last cycle, Teacher 3 was more relaxed in spending time on Decision Training tasks. She also felt Student 3 was at a stage where she had enough strength and movement vocabulary to attempt to improvise with longer movement sequences. In the third research cycle, Teacher 3 decided to continue to focus on "decision making" but also to increase the "self-coaching" cue exercises, where the student was required to work on tasks to develop her own movement sequences autonomously:

I feel she lacks creativity so we took 15 minutes of the class and I said to her "you're sitting ... find three different positions to be on the bar ... you could be sitting, on the side, lying, three positions on the bar". After that we could do "you are standing, after that you are upside down and then you play". For her it's clear "I'm *demi renversé*, I have to find three positions, I'm in a tight ball by my feet ok I need to move in this position so there's no up and down". (DBT 3.03)

This suggested that the teacher, who started out as perhaps the most traditionally direct and behaviourist of all the teachers in the project, having "formal authority" with "personal model" teaching styles, was trying new teaching strategies more in line with the "facilitator" teaching style that "Guides and directs students by encouraging cooperative as well as independent learning activities" (Grasha & Yangarber-Hicks, 2000, p. 5).

Teacher 3 continued using "video feedback" and "variable practice", but also introduced a form of "external focus of instruction", directing the student's attention to the effects of her performance in terms of artistic quality and interpretation. There was also "hard first" instruction because of the bringing forward of performance elements while the student still had a relatively small movement vocabulary.

Even at this late stage, Teacher 3 was still concerned about the lack of a movement vocabulary in this particular student:

Teacher 3: I would like to see a little more figures (movement sequences) that are accomplished and accumulated. We haven't accumulated as many figures and movements because I could not give her as much because I was waiting for her to develop. [...] We were waiting for her to unblock. (DBT 3.03)

Teacher 3 introduced "self-coaching" tasks whereby Student 3 was required to create movement that could be successfully done with the dance trapeze while either in contact with the floor, or from the floor into the air (small tour, tour and grand tour), spinning (usually from the floor into the air) and fixed (where the trapeze remains stationary in the air) and to compose these movements into a sustained sequence:

Teacher 3: What we said that she needs to do before the end of the [training] year [is] to have a combination that's not just a figure, that's a combination with a tour, a grand tour, a small sequence while spinning, and the fixed [sequence]. So then there are three trapeze positions—fixed, grand tour, spin that she needs to use, she needs to show [...] then she needs to decide which figure is going to

work while balancing, [or in] the grand tour, or which is going to work in spinning and what we're going to leave for the fixed [...]. She needs to decide on her own but probably she will not give the right answer but that's normal. (DBT 3.03)

Teacher 3 also applied some "hard first" instruction in this later period; for example, getting Student 3 to try a move for which she did not yet have the strength:

Teacher 3: No. She hasn't tried it yet, she hasn't tried it spinning, so today when we tried it she could not lift her legs because the resistance is different (she makes a gesture of pulling up her legs against inertia) and then [Student 3] said, "oh no it's not working". Because normally it functions but at this point she does not have the strength to [do this action while spinning].

Interviewer: But you still let her try it.

Teacher 3: Oh yes.

Interviewer: You knew it was not going to work?

Teacher 3: Yes I knew it was not going to work, we put the mat there (meaning a crash map was placed under the trapeze as the teacher expected the student might fall attempting the movement).

Interviewer: But you still let her experiment?

Teacher 3: Yes because she needs to understand why it's not working. (DBT 3.03)

Just prior to Student 3's audition, and again in this later period, Teacher 3 also used the Decision Training tool of "external focus of instruction". In discussing this tool, Vickers cites Wulf's work in various sports (Wulf et al., 1998, Wulf, Shea & Park 2001, Wulf et al., 2000). This research compared the performance of participants when they were instructed to focus their "attention" on an "internal" aspect such as the details of an action—which is a behaviourist approach—and when they were instructed to focus their "attention" on an "external" aspect such as the effects of an action. Vickers writes that:

Most statements made in coaching, whether for the purposes of feedback or for instruction, are about how to control movements of the body. This process creates an internal focus where the athlete's attention is drawn into the body and its processes [...] When a coach uses an external focus, the emphasis is on the goals of the task and specific objects and locations in the environment. (Vickers, 2007, p. 217)
In Wulf's and his co-researchers' experiments, an "external" focus of instruction yielded better results than an "internal" focus of instruction. Wulf, Shea and Park (2001) explain their results using the constrained action hypothesis, which states that "conscious attempts to control movements interfere with automatic motor control, while focusing on the remote effects of the movement allows the motor system to self-organise more naturally (e.g. Kelso, 1995) unconstrained by conscious control" (p. 342). This implies that an "external" focus frees the internal system to function at a more optimal level (Vickers 2007, p. 218).

The teacher felt the student was "holding back" in the way she performed. To counter this she used "external focus of instruction" to focus the student on the external effects of her actions on an audience. The teacher did so by asking the student to mentally focus on the concept of what she termed "artistry" in her performance which she explained as how the student approached the transitions between positions and the presentation of her personality in performance. In the following exchange, Student 3 discusses her perception of the teacher's strategy:

Interviewer: Do you remember? [...] you watched some video feedback [...] and [Teacher 3] said to watch it as if you were an acting teacher. Student 3: Right yeah.

Interviewer: What do you think she's sort of saying when at the very end [Teacher 3] said, "I'm not seeing the artist just an interpreter" [...]. What do you think she's saying there?

Student 3: I wasn't showing like I was having fun, that kind of thing. So like showing my personality and adding that. I was just going through the movement instead of the actual artistry of it.

Interviewer: So when she used the word "artistry" what does that mean to you? Student 3: Not just doing the movement step by step but all the in-between things and adding your own style to it, personality.

Interviewer: Ok "style," so what's a style, what's your own style?

Student 3: Mine's contemporary kind of, like dance.

Interviewer: Explain a little bit [about] your style [...]

Student 3: It's not sharp, it's like smoother dance-wise.

Interviewer: Right, is that something you want to present as well?

Student 3: Yeah. (DBS 3.03)

This revealed that there was a change going on in Student 3 who was starting to become aware of the Decision Training strategies and their focus on "tactical whole training" (Vickers, 2007, p. 164), which in circus arts includes both the performing style and the artistry of the performer.

Another example of Teacher 3's use of "external focus of instruction" on artistry in performance, was when she used mirror work in relation to the student's performance projection. Using the mirrors, Teacher 3 asked Student 3 to watch herself as she performed:

Teacher 3: they need to work in front of the mirror because for those who don't have that instinctual aspect they need to see to understand [...]. I was doing that (using the mirror) in the Multizero (a dance studio at the school equipped with mirrors). I was taking a whole class. How to move, how to walk, [...]. She needs to look at herself. Then when she walks and she watches herself in the mirror then she can change it. Because for her what she's thinking and what's projecting [are] not connected. I hope for [Student 3] it's just a lack of knowledge. (DBT 3.03)

Teacher 3 remarked that Student 3 improved after the audition:

Teacher 3: I had the impression with [Student 3] something clicked after the auditions [...] In the audition she did well. She performed as expected, but working with her last week and this week it looks like she made a lot of progress. We'll see if that lasts. Because what I was telling myself was that she was not progressing fast enough. Not that she does not have potential. The approach that I had with her was not bringing enough results. Was it due [to] the audition that she's afraid she's not strong enough and she was holding back I don't know? (DBS 3.03)

This improvement could have been the curve that was also experienced in Case Study 2; that is, the short-term drop in performance when Decision Training is initially applied (Vickers, 2007, p. 202). Remembering that in the previous research cycles Teacher 3's objective was to produce rapid short-term improvement in the student in preparation for the auditions, this slower uptake in performance over that period proved frustrating for her. However, once the student began to improve after the audition, Teacher 3 noted improvements not only in the student's physical strength but also her "decision making" skills: Teacher 3: Already there's a speed of execution. There's a memory that she applies from one movement to the next and she'll redo something and she has strength. [...] She's more comfortable. (DBS 3.03)

By the end of the third research cycle some improvements in the student's learning behaviour were beginning to manifest themselves. The student was starting to communicate more, and was becoming less "dependent" in her learning style, and the teacher had become more open to using Decision Training strategies.

8.5 Chapter Summary

The third and final action research cycle began with teachers reflecting on what had happened in the previous cycle. All teachers decided to continue developing the same cognitive ability, but modified certain aspects of their Decision Training plans in the choice of Step 2 cognitive exercises and Step 3 teaching tools.

In Case Study 1, Teacher 1 continued to train "focus and concentration", targeting the flow of movement in the body and directing focus away from mental distractions such as over-analysing the movement material. In this research cycle, Teacher 1 used Step 2 exercises that prompted the student to focus on "intuitive/wholistic" tasks (Allinson & Hayes, 2012) in the form of "kinaesthetic" cuestructured improvisation exercises using "video feedback", "variable practice" and "random practice" design. These tasks were to some degree resisted by the student because of his "analytic" cognitive style preference (ibid.). The student's "independent" learning style, typical of students who are confident in their own learning abilities and who "prefer to learn the content that they feel is important" and "prefer to work alone" (Grasha & Yarbanger, 2000, p. 5), created some challenges for the implementation of Decision Training interventions.

By the end of the research period, Student 1 had adopted some structured improvisation compositional techniques using "variable practice" and "random practice" and had started to be more open to using "video feedback". In this research cycle, Teacher 1 continued to apply adaptations of cognitive cue exercises.

In Case Study 2, Teacher 2 continued to focus on "attention" to "breaking down skills" using visual cue exercises, but he also targeted "attention" on aesthetics. This was a whole training progression that was a form of "hard first" instruction that showed the student the performance context for the "breaking down skills" work done in the second research cycle. The teacher increased the use of "memory retrieval" and

"reaction time" cues used in conjunction with "variable practice" and "random practice", and made working on aesthetics an out-of-class, "self-coaching" exercise where the student had to review videos of expert models and compare them to his own performance. For the Step 3 tools, the teacher continued to work with most of the Decision Training tools. There continued to be a high volume of live and video "modelling" through the presence of other students training in the class.

By the end of the research period, Student 2 reported that one of the key things he learnt from working with "attention" to "breaking down skills" was that complex difficult skills, which he had previously been afraid of, were actually made up of smaller easier skills—"little tricks"—and that if each component part of a "big trick" was mastered and attended to in the performance of the trick, then "a big trick became easy" (DBS 2.03). This clearly shows how the teacher's Decision Training plan of training the student's "attention" to relevant information within the trick was successful.

In research cycle 3, Teacher 3 continued to target "decision making" but increased the scope of "self-coaching" cue exercises in the form of compositional tasks to include whole sequences that the student was required to compose autonomously, and the use of "random practice" and "variable practice" in the form of structured improvisation exercises in class to increase movement vocabulary. The teacher also introduced a form of "external focus of instruction", directing the student's attention to the effects of her performance in terms of artistic quality and interpretation. Throughout this research cycle there was less use by Teacher 3 of direct "modelling" in the form of the "personal model" teaching style, which "oversees, guides, and directs by showing how to do things and encouraging students to observe and then to emulate the instructor's approach" (Grasha & Yarbanger, 2000, p. 5), and more use of a "facilitator" approach concentrating on getting the student to work autonomously.

By the end of the research period there was evidence of some improvement in Student 3's autonomy, such as starting to propose some solutions to compositional tasks, and there was some evidence of the student working on choreography outside of class. There was also some improvement in technical performance after a drop-off in the second research cycle, in line with Vickers' comments about the initial drop-off in performance when using Decision Training (Vickers, 2007, p. 202).

In Chapters 6–8 I have reviewed, discussed and compared the different ways teachers used and adapted Decision Training in each case study based on observations, interviews and discussions, and the effects this had on learning and teaching. What can

be seen are the different approaches that the teachers used to adapt Decision Training strategies for the specificities of circus arts practice. Case Study 2 emerges as a particularly successful application of Decision Training and can be seen as an exemplar in terms of how Decision Training might be introduced into the main program at the NCS. The other two case studies also identify particular approaches to working with Decision Training in applications across a spectrum of student practice ranging from technically expert (Student 1) to novice (Student 2). All the case studies yielded data and results that I now take forward into my discussion of research findings.

Chapter 9: Research Findings

9.1 Chapter Introduction

In Chapters 6–8, I discussed the experience of case study teachers and students through the first formal trial of Decision Training in a circus arts school as I followed them through three action research cycles.

Based on my reflections on the data gathered from the observations, interviews and focus group meetings of these three research cycles, I will now go on to discuss my research findings, and these will form the basis for my recommendations in the final chapter.

9.2 Research Finding 1: Decision Training has the Potential to Enhance Current Pedagogies at the NCS

The first and most important research finding from this research project is that, based on the comments of all three of the NCS teachers involved in the research project, my own observations, analysis of interviews and feedback sessions, current circus training at the NCS could be enhanced effectively through the introduction of Decision Training.

First, all three of the teachers involved in the research project commented on the benefits of the research process and the introduction of Decision Training, in that it had caused them to reflect on their own teaching practice. They all also noted that they thought Decision Training approaches had enhanced their teaching, and that they would be including what they had learnt in the project in their teaching in the future.

Teacher 1 ("facilitator" teaching style), from Case Study 1, commented on how Decision Training had not only given him tools with which to teach but had also made him aware of why he was using them:

Teacher 1: the biggest positive point [...] was to become conscious of what I was doing, of what tools I was using and why I was using them and not just [...] using things by habit like, "I don't understand why anymore but I use it". So all this research [has] made me think about the whys. How I could improve that. And yes it gives [me] tools for [...] teaching ... it was a success in [the] way that I discovered a whole bunch of tools that are useful. (FG4) Teacher 2, ("expert" and "facilitator" teaching styles), from Case Study 2, who had some prior familiarity with Decision Training, commented that working on the research project had made him conscious of the Decision Training tools he already employed before the start of the research project, and also of the tools he had not been using to the same extent. He reported that he was able to refine his use of the tools by applying the Decision Training 3 Step process. He also had some reflections on how to approach the timing of phasing in the Decision Training tools:

Teacher 2: ... so if I am not using the seven [Decision Training] tools the result wouldn't be as good [...] I have to use the seven. Then it's to know: Do I do the seven all at the same time? Is there an order? Do I tell myself which tools do I start with and [...] is an order that could vary depending on the person? ... I am totally convinced there's a chronological order that [in] the majority of cases should be used. The first one is "variable practice", that's undeniable. "Random practice" is not right away. I'm not in a hurry to use it. I want them to be ready to perform and I don't feel I need to use that right away. "Hard first", I use it quickly because human nature responds to challenge. The question is to see up to where I use it ... to not [encourage] bad habits. So as a teacher [it] is to tell myself, "I can go up to here. After that it's dangerous but it's still a challenge for that person". And that's good because people respond to challenge [...]. Then I [would do] a variety. I did "hard first" and then I want them to have "video models" pretty soon so there is a reference because you don't want them to have bad habits because it's really hard to change after that. So pretty soon at the beginning there are models, references, it's very beneficial. After that ... "questions" ... I do that fairly [early]. Then after the "questions", after that I start delays [with] the questioning. Because then I have to make them practice thinking. Once they've learnt how to think then I wait. I wait for them to do the reflection. But until they've learnt to reflect I ask questions [...]. They need to get used to thinking, "Why isn't it working? Why isn't it correct? I don't know yet". So you want them to get in the habit of doing that. Then after that I bring the "random" because the "random" is important but not at the beginning. I would put it later. So in general that would be the order. (FG4)

These reflections from Teacher 2 not only speak to how Decision Training tools might be used in learning and teaching at the NCS, but also underscore the effectiveness

of the action research methodology that structured and informed the research. The action–reflection–action process that constitutes action research is driven by the question "How can we make what is happening now better?" (Stringer 2012). Through taking this methodology into his thinking, Teacher 2 can be seen reflecting on an approach to the most effective use of Decision Training tools.

Teacher 3, ("formal authority" and "personal model" teaching styles, but also evidence of "facilitator" teaching style in later stages of the project), the most experienced circus teacher of the three, and from my initial perception, the most traditionally behaviourist in her habitual teaching style, also reported that the process of working with Decision Training had influenced her thinking about teaching. She commented on the effectiveness of certain Decision Training strategies that addressed the visual learning preference of Student 3, such as "video feedback", which helped the student to see what she was doing wrong as she was not understanding verbal instructions:

Teacher 3: She's visual [...] So these days the video helps us for that ...So with the video she could tell me, "Ok now my arm was not right". But if you ask her without video she cannot answer. (DBT 3.02)

Teacher 3 also noted a delay in improvement with Student 3 that mirrors the short-term drop-off in performance when Decision Training is initially applied, as described by Vickers (Vickers, 2007, p. 202). Teacher 3 noted, however, that once the student began to improve after her audition, there were improvements not only in her physical strength, but also in her cognitive skills. Teacher 3 commented on this development in the final interview just near the end of the third research cycle, "Now I don't need to be beside her to support her. She's doing it. So something unblocked. We will see. I was happy with those days" (DBS 3.03).

In the final focus group meeting, Teacher 3 reported that as a result of working with Decision Training she would change her habitual teaching practice to promote more student autonomy and self-regulation:

Teacher 3: Now with this method I feel I can ask them to do more things on their own. Before I was doing that for them [...]. Probably I will help the people less. To give them more autonomy and ask them to be more aware of what's happening around them. To look, to read, to go get information. Before I was doing that myself. I would bring videos, I would point out things. Now with this

method I feel I can ask them to do more things on their own. Before I was doing that for them. (FG4)

With respect to potential ways Decision Training could be introduced into teaching practice at the NCS, all three teachers discussed possible approaches. Teacher 1 commented that incorporating a new approach such as Decision Training into teaching practice at the NCS could be a challenge, with one of the biggest challenges being "to change your habits in pedagogy" (FG4). He suggested that a solution to this challenge of changing pedagogical habits could be:

Teacher 1: to go step by step, little by little, small doses, you don't have to [...] completely change your pedagogy. I am not entirely in agreement to use [all] the 7 [...] tools, maybe you can use 1, 2 or 3. Yes it would be interesting in a chronological order to insert them little by little. After that there's probably a balance to find, and that you have to be comfortable to teach that. (FG4) Teacher 3 had some insightful comments about the timing of introducing

Decision Training feedback strategies when working with a student who was a novice in the discipline. She suggested it would be best to use Decision Training immediately with experienced students in their first year of training, but to integrate it later in the year with less experienced students when they had developed a movement vocabulary (FG4).

Although there was much to learn from all the case studies, Case Study 2 showed clearly the benefits of using Decision Training in the circus arts context. With respect to Decision Training "best practice", the way that Teacher 2 applied Decision Training and the resultant learning response of the student can be seen as an exemplar for future consideration of how to implement Decision Training into the main program. Teacher 2's choice of Step 1, 2 and 3 elements effectively prompted the student's decision-making skills and self-regulation, and the teacher switched between "facilitator" and "expert" teaching styles in response to changes in the student's learning. This all combined to contribute to successful learning outcomes and to the productive rapport between student and teacher.

The reflections of all three teachers now lead me to the next research finding, which is based on how the teachers adapted to the use of Decision Training and integrated it into their teaching practices.

9.3 Research Finding 2: The Benefits of an "Integrated" Approach to Circus Training Combining Aspects of Decision Training with Direct Training

The second research finding was prompted by my reflections on the teachers' comments about the benefits of Decision Training, and my observations of how they went about applying Decision Training in circus classes. There appears to be an optimum "integrated" approach to pedagogy in circus arts for effective and safe training in the high-risk training environment of circus arts. The "integrated" approach that emerged through this research project combines elements from direct behaviourist training and Decision Training. This accommodates the development of students' decision-making skills and self-regulation, while allowing teachers to switch to linear practice and direct feedback and instruction when safety, stress or lack of foundational knowledge are significant concerns.

I observed that, in all of the case studies to a greater or lesser degree, Decision Training was used in combination with direct linear training.

In Case Study 1, linear training manifested itself in the student's own selfdevised training plan, in which he would work sequentially through his repertoire of diabolo skills outside of class engaging in the habitual practice of expert jugglers; that is, high-volume, high-repetition self-training.

In Case Study 2, Teacher 2 used linear practice design to build foundational skills in the "breaking down skills" approach to the student's cognitive weakness, but mixed this with Decision Training feedback and instruction strategies. Case Study 2 demonstrated clearly how the amount of linear direct teaching required is also aligned with the type of student, even in the accumulation of foundational skills. The teacher stated that he could introduce "variable practice" earlier with this student than he could with other, less talented students, with whom he would use linear practice for longer (DBT 1.01). Teacher 2 also switched to direct teaching when he picked up on the student's stress level with a particular skill, when specific information was needed for the skill to be attempted safely or when a particular linear progression was required for the student to understand how the component parts of a larger skill went together. Williams et al. speak to this last point about the importance of sequential training in highly technical disciplines such as trampolining, "Sequencing of this kind is an important [...] aspect of sport skill learning; coaches of gymnastics, ice skating, diving and trampolining will readily relate to this statement" (1999, p. 346).

In Case Study 3, Student 3, ("dependent" learning style), found it hard to hold new skills in her memory, and did not appropriate the Decision Training strategies and convert them into acquired learning skills with the same speed as Student 2 ("collaborative" and "participant" learning styles), in Case Study 2. Teacher 3 chose to mix sequential practice with Decision Training, progressing gradually in a linear way with the student from the floor to the air, from sitting to standing to being upside down, and slowly increased the complexity of movement pathways, and at the same time using the cognitivist approach of improvisation.

As Student 3 came close to the performance of her act for the audition, the teacher asked if she could stop using Decision Training and move to direct teaching. At this point, a high repetition of rehearsals of the student's act was necessary to refine her performance. However, during this time the teacher continued frequent use of "video feedback", introduced as part of Decision Training and which the teacher did not normally use but had found useful, replaying rehearsals to give artistic feedback in a visual way to the student.

In the final interview, Teacher 3 commented that in her opinion, with such a student, direct linear teaching should be used until the student has acquired a foundational movement vocabulary that can be recalled from memory, before introducing Decision Training.

This highlights a finding arising from this research period: in the context of the high-risk environment of circus training, Decision Training may not necessarily be an appropriate model to use at all times. In response to different issues such as stress, safety, lack of foundational movement vocabulary or foundational knowledge on which to draw, or during lead-ups to performances, the teachers in this research study chose to switch from Decision Training to aspects of direct, linear training.

An "integrated" approach to training could consist of Decision Training with its focus on problem solving and self-assessment combined with some aspects of direct behavioural training, such as the use of immediate feedback and linear repetition at specific points in training, such as in the rehearsal of an act in the lead-up to a performance where consistency and endurance is a focus, or where there is the potential for injury if immediate direct feedback is not given. The timing of the use of Decision Training in relation to the level of foundational knowledge could be addressed by employing a phasing in of strategies, as I will discuss in my recommendations in the final chapter.

The research finding regarding the efficacy and suitability of an "integrated" approach combining aspects of both Decision Training and direct training suggests that Decision Training can be phased in a way that can be seen to "enhance" and "complement" current teaching expertise, which has already clearly been shown to be effective in terms of graduate recognition in the industry (Donnelly, 2014). In this way, teaching "best practice" can be addressed by using Decision Training in combination with current practice. This "integrated" approach would accommodate the development of students' decision-making skills and self-regulation; at the same time allowing teachers to switch to linear practice, and direct feedback and instruction when safety, stress or lack of foundational knowledge are significant concerns.

9.4 Research Finding 3: Learning and Teaching Styles and their Relevance to Decision Training

The next research finding emerged from a general reflection about learning and teaching styles (see Chapter 2), a subject on which, as far as I am aware, there has been no published research in the area of circus arts. This research finding is that it would appear to be important to take into account learning and teaching styles in the implementation of Decision Training in a circus training context, given the diversity of students and teachers, the range of learning tasks and the range of disciplines studied.

My assessment of the various learning and teaching scenarios in each case study, with respect to learning and teaching styles, and their effects on Decision Training has drawn on a number of theories and inventories of different multi-modal learning styles and perceptual preferences of students (Grasha & Yarbanger, 2000; Reid, 1987; Felder & Silverman, 1988; Fleming & Bonwell, 1998), and their training backgrounds and habitual cognitive modes (Allinson & Hayes, 2012; Hammond et al., 1987).

Teacher 1, in Case Study 1, had significantly less experience than the other teachers in the research project. He had been teaching circus arts for seven years; much less than the 17 years for Teacher 2 and 25 years for Teacher 3. He also did not have a performing arts-related background prior to training as a circus arts teacher, unlike the other two teachers. Teacher 1 had a cognitivist teaching approach and was interested in "guiding" students (DBT 1.01) and collaborating with them on training objectives; he had what Grasha and Yangarber-Hicks (2000) describe as a "facilitator" teaching style.

Student 1 had a prior background in circus and was functioning at a very high technical level. The student had an "independent" learning style (Grasha & Yangarber-Hicks, 2000, p. 5) in that he generally preferred to engage in his own personal training agenda, which included documenting his complete repertoire of diabolo skills with descriptions and diagrams. This documenting and drawing are all hallmarks of "visual" sensory modality (Reid, 1987; Fleming & Bonwell, 1998), which Faubert suggests is dominant in athletes (Faubert, 2013); although Student 1 was slower that the other students in the research project in his uptake of the visual tool of "video feedback".

Student 1's "analytical" (Allinson & Hayes, 2002; Hammond et al., 1987) cognitive mode was reflected in the way he approached self-training, working through his skills in a sequential manner (DBS 1.01). Student 1 could be characterised as having a mixed learning style that was "independent" (Grasha and Yangarber-Hicks, 2000, p. 5) and "analytical" (Allinson & Hayes, 2002; Hammond et al., 1987) with a "visual" learning preference (Reid, 1987; Fleming & Bonwell, 1998).

In contrast, Teacher 2 was a highly experienced teacher from a performing background with prior knowledge and some habitual use of Decision Training, who was paired with an intrinsically motivated student. The teacher could be described as predominantly a "facilitator" but also with elements of an "expert" teaching style (Grasha & Yangarber-Hicks, 2000). This mix of teaching style as both "facilitator" who "guides and directs" (p. 5), and "expert"—that is, having knowledge and expertise the student needs and "concerned with transmitting information and insuring that students are well prepared" (p. 5)—presented a multi-modal teaching style adaptable enough to deliver an "integrated" teaching method combining Decision Training with direct linear training.

Student 2 had a "participant" (Grasha & Yangarber-Hicks, 2000) learning style and was open and responsive to teaching interventions. The student's habitual cognitive mode of being "intuitive" began to change in the class environment to a more "analytical" one (Allison & Hayes, 2002; Hammond et al., 1987) as he absorbed the "breaking down skills" approach. Student 1 had a "visual" sensory mode, responding to visual instruction through the use of "video feedback" and "live modelling", but he also responded well to "kinaesthetic/tactile" instruction.

Teacher 3 was a highly experienced traditional, behaviourist teacher from a performance background who had been paired with a non-verbal student with no prior background in circus and used to being trained in the behaviourist way. Teacher 3 used

a teaching style that was a combination of: 1) "formal authority"—that is, possessing "status among students because of knowledge and role as a faculty member [and concerned] [...] with providing positive and negative feedback, establishing learning goals, expectations, and rules of conduct for students" (Grasha & Yangarber-Hicks, 2000, p.5); and 2) "personal model" —that is, "a prototype for how to think and behave. Oversees, guides, and directs by showing how to do things and encouraging students to observe and then to emulate the instructor's approach" (p. 5).

Student 3 had a "dependent" learning style in that she would wait for instructions and feedback rather than ask questions or propose solutions; she had a low level of self-regulation. Of the three, this student was probably the most "visual" in her sensory mode. In this case study, both teacher and student were confronted with a cognitive learning and teaching approach that was not familiar to them. The teacher took on the task of applying Decision Training strategies, but the situation presented challenges in terms of the student's "dependent" learning style and her lack of foundational circus knowledge and also discipline-specific physical conditioning.

In all of these case studies, in addition to the effect on the implementation of Decision Training, these learning and teaching styles also affected:

- perceptions—both the teachers' perceptions of their students, and the students' perceptions of their teachers
- 2. the rapport between the teachers and the students.

In Case Study 1, there were issues relating to Student 1's perception of Teacher 1's teaching expertise. This was apparent when teaching interventions were introduced that the student perceived as being outside the teacher's areas of expertise: for example, when the teacher introduced what the student considered were dance-based improvisation exercises into the Decision Training process in the last research cycle. When this happened, the student was resistant to teaching interventions, which is a characteristic of students with an "independent" learning style who "prefer to learn the content that they feel is important", and also elements of the "avoidant" learning style, characteristic of students "who are not enthusiastic about learning content" (Grasha & Yangarber-Hicks, 2000, p. 5).

Teacher 1's perception of Student 1 was that he was challenging to teach because of his "independent" learning style (FG 1) and "overthinking" things (DBT 1.01), both of which related to the student's "analytical" cognitive mode (Hammond et al., 1987). It appears that the teacher's use of a "gestation period" (DBT 1.02) to allow the student time for "incubation" (Davidson, 2003, p. 162) of an idea to be considered or developed, was an appropriate strategy and helped diffuse potential difficulties with rapport. Student 1's perception of the teacher at times had implications for the rapport, but the teacher avoided any escalation of this through meetings with the student that allowed for open discussions to take place to discuss and resolve issues (DBT 1.03).

In Case Study 2, the student's background in community circus contributed to his high level of intrinsic motivation to learn, as he had a perception of being privileged to be studying at the NCS, and to be receiving the expert technical teaching that was being provided by the teacher (DBS 2.01). Student 2's perception of his teacher was that he was an "expert", a resource of information he needed to fulfil his objectives of "cleaning up" his "technique" and adding new skills to his repertoire to improve his employment prospects upon graduation (DBS 2.01). Teacher 2's perception of Student 2 was that he was motivated, a fast learner and talented with the potential to be an elite acrobat (DBT 2.01). Therefore, perceptions aligned in a way that resulted in a productive rapport between the two.

The teacher in Case Study 3 had many years of experience training students at elite level who had gone on to work with the world's top circus companies. In this case study it is difficult to say much about the student's perception of Teacher 3 as she was not forthcoming in interviews, although she did comment that Teacher 3 did not use feedback in a negative "mean way" (DBS 3.03) as her previous teacher had done. She also indicated that she felt she had "more time" to work on things on her own with her second teacher (DBS 3.03), a teacher outside the project, who had a more "facilitator" style and with whom she trained one hour a week—although it is important to note that the class with the second teacher also contained a higher level student so the teacher's attention was not all focused on this student, unlike in the one-on-one situation in Case Study 3.

Teacher 3's perception of the student was that she lacked self-regulation (DBT 3.01), the hallmark of the "dependent" learning style deriving from an exclusively behaviourist training background. The teacher's perception of why the student was so "non-verbal" was that the student had no foundational knowledge with which to engage with feedback or on which she could draw to propose ideas. Rapport was affected by the student's learning style, with the teacher being used to a faster uptake of teaching strategies.

This research finding suggests that teachers' selections of Decision Training tasks and the strategies employed in teaching them need to take into account the effect of the different multi-modal learning styles and perceptual preferences of students (Grasha & Yarbanger, 2000; Reid, 1987; Felder & Silverman, 1988; Fleming & Bonwell, 1998), while also taking into account the students' training backgrounds and habitual cognitive modes (Allinson & Hayes, 2012; Hammond et al., 1987).

It would also appear that teachers need to become aware that they themselves are multi-modal, and able to switch between teaching styles in response to the different Decision Training tasks and the learning preferences of their students. Responding with a multi-modal teaching approach to different learning preferences has been shown in "numerous studies over the last ten years" to demonstrate "that when students were taught with instructional resources that matched their perceptual strengths (visual, auditory, tactual or kinesthetic) they achieved higher test scores than when taught with techniques which were mismatched with their preferences (Dunn, 1988)" (Brunner & Hill, 1992, p. 27).

These findings about the relationship between learning and teaching styles and Decision Training have implications for the potential introduction of Decision Training at the NCS given the context of the diversity of students and teachers, and the range of disciplines studied; this will be discussed further in my recommendations in Chapter 10.

9.5 Research Finding 4: There are Effective Teaching Modalities for an "Integrated" Approach to Training

Following on from my discussion of an "integrated" approach that combines Decision Training with elements of direct training and the importance of learning and teaching styles on the effective implementation of Decision Training, the next research finding is that there appears to be a combination of particular teaching styles that enables teachers to effectively implement a responsive and productive combination of these two forms of training. The work of Grasha & Yangarber-Hicks' (2000) on teaching styles has informed this discussion, and it is their five categories of teaching ("expert", "formal authority", "personal model", "facilitator" and "delegator") that I have used as a reference.

Based on my observations of teaching styles employed during the research and their effects on Decision Training, the most effective teaching style for the "integrated" approach to teaching appears to be a combination of "facilitator" and "expert" (Teacher 2). Teacher 2 used this multi-modal teaching style employing a "facilitator" approach to prompt self-regulated learning behaviour through Decision Training, while also using an "expert" approach when direct teaching was required such as in situations where the student needed to be given expert direct instruction for the safe execution of a skill. This multi-modal approach enables a teacher to switch effectively between "facilitator" and "expert" in a responsive and timely manner.

In addition, a teacher who also has a "personal model" approach (Teacher 3) can address the dominant visual learning preference of circus artists through demonstrating physical skills.

This research finding of particular teaching modes that were effective in teaching an "integrated" approach to training has implications for recommendations with respect to teacher training. In terms of the influence of learning styles on the implementation of Decision Training it also points to the potential benefits of testing NCS students for their learning style preferences. I will elaborate on these points further in the recommendations and implications for future research in the final chapter.

9.6 Research Finding 5: The Effect of Decision Training Strategies that use Visual Perception in Circus Training

Decision Training strategies that addressed the visual perception of students were particularly effective in this project. This is not surprising given the nature of the training environments, in which the students were constantly interacting with an apparatus or objects in the space. As Stevens-Smith and Cadorette (2012) note:

Research by Singer (1980) suggests that visual perception is the most important source of information in sports. Visual learners' primary source of information comes through the eyes from watching or seeing. A visual learner needs to see a move or a specific play demonstrated to pick up on the important perceptual cues. (p. 368)

The importance of visual perception for motor learning is a key issue in Decision Training that is based on Vickers' adaptation of Newell's (1987) original "constraints>perception/action cycle>coordination" constraints-led model, to which she added the different types of gaze behaviour of athletes for targeting, interceptive timing and tactical tasks (Vickers, 2007, p. 10). Vickers also proposed "video feedback", live "modelling" and video "modelling" as Decision Training tools and all of these involve visual perception. These tools were effectively used, and were quickly adopted and implemented as Decision Training strategies in the project.

In all the case studies, video was widely used as a tool for feedback, instruction and communication. After some initial reluctance, "video feedback" became a means for Student 1 to verify his lack of tactical performance skills. In Case Study 2, one application of video for feedback and "modelling" was the use of first-person video from a head-mounted camera together with third-person video taken from various external viewpoints to effectively address the student's incorrect gaze behaviour for a tactical task. In Case Study 3, video was used not only for feedback and instruction, but also as a means to help with communication with a non-verbal student and to overcome some language issues.

As Reid (1987) points out, most students are multi-modal when it comes to perceptual preference or sensory modality, and all the circus students in the project had dominant visual learning modalities; however, they were all to a greater or lesser extent "kinaesthetic" and "auditory" learners as well. I would argue that the fact that participants responded to visual supports is closely linked to kinaesthetic learning and not separate from it. For example, when, in case study 2, the student recalled watching both the first person (internal footage) and third person (external) video footage and linking what he watched with the kinesthetic feeling of doing the trick, this invoked a kinesthetic response. This type of visual information, known as "kinaesthetic imagery", is imagery that invokes "the cognitive recreation of the feeling of movements" (Callow & Hardy, 2004, p. 167).

This research finding, however, highlights the fact that visual learning is involved in many elements of Decision Training, such as the use of "video feedback" and "modelling", "external focus of instruction" and "hard first" instruction, and "location", "object" and "quiet eye" cues. These Decision Training strategies were widely used to significant effect in this research and were adopted by teachers and students. This has implications for the implementation of Decision Training in that these visual strategies could be adopted relatively easily and quickly into an initial phasing in of Decision Training at the NCS.

9.7 Chapter Summary

In this chapter I have discussed research findings based on my reflections on the data from the observations, interviews and focus group meetings from the three research cycles.

The first research finding was that Decision Training has the potential to be highly beneficial in enhancing teaching practice at the NCS, as evidenced by teachers' comments on the benefits it had brought to their teaching, how it had made them reflect on their own teaching practice, and how they would all include aspects of Decision Training in their teaching in future. Case Study 2 is an exemplar of what could be considered "optimal" conditions with respect to the application of Decision Training in relation to the effective development of student decision-making skills and selfregulation. The results from this case study demonstrated what is possible when Decision Training is integrated into teaching practice at the NCS in optimal conditions; that is, with a good match of learning and teaching styles, a match of learning and teaching objectives, and good rapport between teacher and student.

The second research finding emerged from my observations of the varying ways the teachers used an "integrated" approach combining Decision Training and direct training. This "integrated" tactical approach accommodates the development of students' decision-making skills and self-regulation, and at the same time allows teachers to switch to linear practice, and direct feedback and instruction, when there is a need for rehearsal repetition in the lead-up to a performance, or when safety, stress or lack of foundational knowledge are significant concerns.

Following on from this, my third research finding involved how learning and teaching styles affect Decision Training interventions. Two key sub-findings emerged:

- Learning and teaching styles can be multi-modal and used strategically, by teachers being aware of and in response to the learning style of the student while doing a Decision Training task.
- The effects of learning and teaching styles in the use of Decision Training can influence the perceptions of teachers and students of each other, which in turn can affect the rapport between them.

My fourth research finding was my observation that certain teaching modalities align well with the use of an "integrated" teaching approach using a combination of Decision Training and direct linear training. Using Grasha & Yangarber-Hicks' (2000) teaching styles as a reference, I proposed the employment of a combination of "facilitator" and "expert" teaching styles (Teacher 2) as being an effective mix with which to integrate Decision Training and direct training in a responsive way. I also noted that a teacher who also has a "personal model" approach (Teacher 3) can address the dominant visual learning preference of circus artists, particularly with a novice with no foundational experience.

The fifth research finding was the effectiveness of Decision Training strategies that address visual perception. When strategies such as "video feedback", video "modelling", live "modelling", visually oriented cognitive trigger exercises, and "external focus of instruction" and "hard first" instruction employing the use of visual content and instruction were employed, these proved to be particularly effective and were widely used and adopted.

I will now go on to discuss the implications of these research findings in terms of recommendations for the introduction of Decision Training at the NCS in the final chapter.

Chapter 10: Recommendations and Implications for Future Research

10.1 Chapter Introduction

In this final chapter I will discuss my recommendations in relation to Decision Training and the training program at the NCS based on the research findings in the previous chapter. In the final part of the chapter I will propose future research following on from this research project.

10.2 Recommendation 1: Decision Training has the Potential to Enhance Teaching Practices at the National Circus School and therefore should be introduced into Current Pedagogies at the School as part of an "Integrated" Teaching Approach

This project began as a study investigating the lived experience of teachers and students through the first introduction of Decision Training at a circus arts school. The research problem was to address the dominance of traditional behaviourist training in circus training, to assess whether a cognitivist approach focused on the development of decision-making skills and self-regulation had potential as a teaching strategy in the NCS. The original questions that drove the research were:

- Does the introduction of Decision Training have the potential to enhance teaching practices at the National Circus School?
- What aspects of learning and teaching theory have implications for the use of Decision Training in a circus arts context?
- How can teachers effectively apply Decision Training in a circus arts training environment?
- In what ways can Decision Training be introduced into the main training program of the National Circus School?

This was seen as important research in the context of the rapidly changing contemporary circus world, which is becoming increasingly hybrid and project based, now requiring circus artists with good decision-making skills and high-level artistic and technical skills, who are highly self-regulated and have belief in their own ability, and who are not only skilled "performers" but also skilled "creators" (NCS, 2015; Herman, 2009; Jacob, 2008). The research had the potential to add new knowledge to circus training, an area in which there has been very little research, but which the NCS has a keen interest to develop through its research centre. In addition, there were potential wider benefits in that research findings could have implications for other performing

arts, as taught in other institutions such as the WAAPA, the international research partner in this study, in dance, theatre and music, and even for learning and teaching more generally in other domains.

Using Case Study 2 as an exemplar, the research findings show that Decision Training has the potential to be of benefit to learning and teaching at the NCS and should be considered as a part of an "integrated" teaching approach.

The teachers and students involved in the research project all speak of the benefits of introducing Decision Training into their learning and teaching practices. The teachers became much more aware of *how* they were teaching. Teacher 1 reported that working with Decision Training had "given him tools to teach with", but had also made him aware of why he was using the tools and "the biggest positive point in all" was that he had "become conscious of what [he] was doing" (FG 4). Teacher 2, who had some previous experience using Decision Training, commented that what he found interesting was becoming "conscious" of the way that he had been using some of the tools "intuitively" and other tools that he had not been concentrating on using (FG 4). Teacher 3, the more traditionally behaviourist teacher of the group, reported that Decision Training had shown her ways to develop the autonomy of students: "Now with this method I feel I can ask them to do more things on their own. Before I was doing that for them" (FG 4).

All the students showed progression in the development of the cognitive skills highlighted in each Decision Training plan. At the beginning, Student 1 did not want to use "video feedback". In the project, Teacher 1 reported that Student 1 was resistant to using "video feedback", citing that student would say, "'It's not finished and I don't want to see' ... I prefer your [the teacher's] point of view and I don't want to see what the public are going to watch. I just want to feel what I do" (DBT 1.01). However, over time the student became aware of the necessity of placing attention outside his own internal narratives about the movement, and he began to respond to the use of "video feedback", which helped him focus his attention on the effect of his performance on spectators. As Teacher 1 reported:

And before watching the video, about the complexity of the beginning [of the student's act], I told him, "yes in the beginning I'm lost, there's too [much information], emotions, it's complicated for me", and he said [after watching the video], "yeah I feel that also", and he has started to open his mind. (DBT 1.02)

Student 2 transitioned from an "intuitive" to a more "analytical" (Hammond et al. 1987) approach to "breaking down skills". For example, at the beginning of the project he just "went for tricks", which meant he was either unable to attempt complex skills, or he did them unsafely without focusing on visual cues that needed to be attended to at specific parts of the trick: "Back then I couldn't just attempt that trick like that because I didn't have no sight of what I was seeing. I couldn't see anything" (DBS 2.02). Over time he started to train and perform in a more structured, safer way, as he commented in relation to a complex skill that he had mastered through a "breaking down skills" approach: "And right now I think I do that trick really really well now … Like I can see everything. It's like 1, 2, 3, 4 (demonstrates with his hand). It's four steps for me and I have four spots where I look" (DBS 2.03).

Student 3 developed better decision-making skills, as reported by Teacher 3 in the later stages of the research project: "Already there's a speed of execution. There's a memory that she applies from one movement to the next" (DBS 3.03).

Teachers were effective in adapting Decision Training strategies, such as Teacher 1's effective use of "object", "location" and "quiet eye" cues, and Teacher 2's multi-modal use of Step 3 tools. Teacher 3's use of visual tools such as "video feedback", video "modelling" and live "modelling" to work with a "visual" student with no prior foundational knowledge was also very effective, as Student 3 commented: "her [the teacher] showing some of the movements and video taping the classes and then going back to the video and seeing what I need to correct and do. That helped a lot" (DBS 3.04).

An additional benefit of the project was that it added to the discourse about learning and teaching at the school. Both teachers and students commented about how being involved in the project, and being able to talk about learning and teaching in interviews and focus group meetings, made them think more about it in the class situation. This links through to the central aim of the action research methodology, and highlights the effectiveness of the action research methodology in highlighting the relationship between reflection and action, and research and practice.

Therefore, in light of the research findings and the comments from both the teachers and students, my recommendation is that Decision Training should be adopted by the NCS, as part of an "integrated" training system. I will now discuss my recommendations as to how this might be done.

10.2.1 Phasing in Decision Training at the National Circus School.

I would first recommend that a series of seminars be conducted to introduce all teachers at the school to the theory and practice of Decision Training. These workshops could be led by either a qualified Decision Trainer—a graduate of the Decision Trainers course at the University of Calgary, Canada—or by Dr Vickers herself. Once teachers are familiar with Decision Training they will be in a position to explain the strategies to their students. The goal of the seminars would be to establish "best practice" for the use of Decision Training in the school. As was revealed in the experiences of teachers in the current study, there is a lot of information to absorb; therefore teachers need to be exposed to Decision Training in stages, with periods to put into practice the new pedagogical ideas.

As used in this research project, the seven Step 3 Decision Training tools would be a good place to start. As Teacher 1 and 2 commented, not all the tools should be used at once, and some tools are more "advanced" than others (FG 4). For example, a Decision Training "practice" tool such as "variable practice", as was used in all the case studies, is relatively easy to introduce and immediately starts breaking up the monotony of linear sequential practice. Once a small amount of foundational knowledge is in place, "random practice" can be added, such as the use of "structured improvisation", as was used in extensively in Case Study 3.

Based on the research findings, "video feedback" needs to be part of the learning environment from day one, and should be set up in a way that students can access it, at first under guidance from teachers, but as their knowledge increases, more and more autonomously.

As Teacher 2 commented, "questioning" can be introduced relatively quickly, even when the student has only a small amount of knowledge, followed up with "bandwidth feedback"; that is, reducing direct feedback as the student becomes more accurate with their self-assessment.

With respect to the Decision Training "instruction tools", "modelling" is an essential part of Decision Training practice for circus arts where so much of the perceptual information is visual, and, like "video feedback", also needs to be part of the learning environment from the beginning of any training process. The effectiveness of "modelling" speaks to the need for mixed group training, with mixed levels and students from different years providing live models for each other.

Another form of instruction from Decision Training that is relatively easy to introduce is "external focus of instruction", which makes the student aware of the external effects of their actions, which is important for any student at the school, as they need to present a performance that makes an impact at the end of each semester, including the first semester they arrive at the school.

"Hard first" instruction was adapted in several ways in the research project, most notably to address artistic performance and creative practice. Artistic "hard first" can be brought in early, but technical "hard first" needs to brought in later when it is safe to use, such as when there is foundational knowledge.

I now move to my second recommendation, which is how I see Decision Training "sitting" within existing teaching practice in the school, which, as mentioned in Chapter 1, is currently largely direct and linear, as is the case in circus training generally. I approach this issue by suggesting that an "integrated" approach, using both direct and Decision Training, would address the specificities of circus training at the NCS.

10.3 Recommendation 2: An "Integrated" Teaching Approach Combining Decision Training and Direct Training

My next recommendation as to how Decision Training could be introduced into the main teaching program at the NCS is to suggest what form this teaching approach could take. My proposal is that an "integrated" teaching approach, combining Decision Training and direct training, be considered.

This would address the particular contexts of circus arts training. These include specific aspects of circus training that I would argue *require* certain forms of direct training, such as linear practice or immediate feedback. For example, there needs to be a certain amount of rigorous sequential training or "deliberate practice" (Ericsson et al., 1993) to reach expert levels of performance, which is one of the objectives of training at the NCS. Linear repetitions are also needed to perfect technical and artistic content in the lead-up to a performance. There needs to be foundational knowledge in place in order for students to be able to perform skills safely using more "advanced" forms of Decision Training such as "random practice" and technical "hard first" instruction. Students who are new to a discipline with no foundational knowledge will sometimes require direct feedback until they have retained enough knowledge in memory to form a

"bandwidth" of knowledge to reference and therefore be able to engage with "questioning" and self-assessment.

On the other hand, as this research project has shown, there also needs to be Decision Training in the learning environment to facilitate the development of decisionmaking skills (Vickers, 2007), self-regulation (Zimmerman, 2001) and "self-efficacy" (Bandura, 1977; Salmerón-Pérez, 2010).

Therefore, an "integrated" approach, whereby a teacher is able to switch between direct and Decision Training, seems a logical and viable way to introduce Decision Training into the main program at the NCS.

10.4 Recommendation 3: An Awareness of Learning and Teaching Styles Enhances Decision Training Use

The research findings also showed how teaching styles that were responsive to students' learning preferences enhanced the effectiveness of Decision Training interventions. For example, in Case Study 2, the teacher's facilitator/expert style was a good match for the student's "participant" style (Grasha & Yangarber-Hicks, 2000). The teacher also recognised that his student had multi-modal perceptual preferences; that is, "visual/kinaesthetic" (Fleming & Bonwell, 1988), and could be taught with both visual and kinaesthetic exercises. In Case Study 3, when the teacher applied a "personal model" teaching style (Grasha & Yangarber-Hicks, 2000) to demonstrate movements on the dance trapeze this was a good match for Student 3's "visual" perceptual preference.

Based on these and other findings about learning and teaching styles that emerged in this project, I would suggest that once Decision Training has started to be introduced into training at the school, attention should be focused on learning and teaching styles in the school. As far as I am aware, there is no published research about this specifically in the area of circus arts training. One way of engaging with the issue could be to include in the first week of each year a learning style inventory questionnaire, using either a behaviour-based inventory, a mixed sensory preference/behaviour-based inventory, or a specifically sensory preference-based inventory, to assess the learning preferences of students, and then ask teachers think about appropriate teaching modalities that could work well with the learning preferences of their students (Grasha 1994; Felder & Silverman, 1988; Reid 1987, Hammond et al., 1987, Fleming & Bonwell, 1998, Dunn, Dunn & Price, 1987). As there are no learning style inventories specifically geared towards athletes, let alone performing artists, as Jones et al. (2008), Brunner and Hill (1992), and Fuelscher et al. (2012) attest, a viable subject for further research would be the selection of a comprehensive learning style inventory that links with teaching styles, which could be used to assess learning preferences of students at the school and point to appropriate teaching styles that match with them.

10.5 Recommendation 4: Video Feedback and Video Modelling

My fourth recommendation stems from the research finding about the effectiveness of visual perception-oriented Decision Training strategies. After appropriate training in the use of "video feedback" I would recommend that video systems are installed in all studios with multi-angle camera positions, including the capacity for both first-person and third-person video recording, motion analysis software for video "modelling" such as side-by-side comparison, and technical support to allow for seamless integration into class flow.

Given the predominance of visual information in circus arts teaching, and research that shows that athletes "prefer to receive new information via demonstrations, video feedback, diagrams, pictures from coaching manuals or magazines, or even instructions that paint a visual image of the skill" (Farrow, Hall & Diment, 2008), it seems self-evident that these "enhanced" learning environments would enable an increased and more sophisticated use of "video feedback" and video "modelling", thereby making these important Decision Training strategies more effective.

10.6 Implications for Further Research

The research findings reported in this thesis have numerous implications for further research, some of which I have already mentioned. These include:

- selecting an appropriate learning and teaching styles inventory, and formally testing for learning and teaching styles and preferences, the data from which could be used by teachers with their students and in a longitudinal study of Decision Training at the school
- a three-year longitudinal study of an "integrated" direct/Decision Training approach following a random selection of students from first year through to third year examining long-term effects on learning and teaching at the school

- a project that looks at the effects of introducing artistic advisors into first year as a form of "hard first" instruction (currently artistic advisors only work with the students from second year onwards)
- projects looking at the wider implications of the research findings for learning and teaching generally in performing arts training. Moving beyond the specific locale of the NCS, research could take place into adaptations of an "integrated" approach in other performing arts training institutions, such as the WAAPA, in other domains such as dance, theatre and music.

Returning to the original reason for this study, which was to conduct an action research within the context of the localized environment of a specific elite training institution, the scope of the thesis was purposefully limited to an investigation of physical training within the context of elite technical, aesthetic and creative skills. There were inevitably a number of limitations to this thesis which lay outside the scope of the study. These limitations, which were stated in the introduction, exclude certain areas of research, including how aspects of gender, ethnicity and other socio-cultural factors, affected the implementation of Decision Training. In addition, another larger discussion about what constitutes and how we measure and evaluate aesthetics and creativity in circus training also was outside the scope of the thesis. The author has been in regular contact (during a research trip to Montreal in February 2015 for example) with research participants since the conclusion of the project, in particular to access the ways in which the teachers at the National Circus School are using Decision Training. However these interviews lie outside the data collection period of this thesis and will be the subject of future research. All these factors present fertile ground for future research.

10.7 Concluding Comments

Returning to what prompted the investigation in the first place, which was a desire to explore new innovative approaches to circus training, I am very excited by the research outcomes, particularly my finding concerning an integrated approach to elite circus training combining direct and Decision Training approaches. I started out questioning whether the direct linear behaviourist approach to teaching, the dominant form of training circus artists, is the only circus pedagogy that works. Given the long hours of rigorous and repetitive practice needed to acquire physical expertise in the circus arts, I questioned what happens with a student's mental engagement in such a training regime, and asked if there were other ways to engage students and still achieve

elite results. While a verification of whether or not better measureable performance outcomes were achieved through the introduction of Decision Training was not in the scope of this study, I would argue that this research has produced a response to this question, namely that an integrated mix of teaching strategies has the potential to address the range of challenges that contemporary circus training faces.

Revisiting my initial comments about the changing landscape of the contemporary circus industry—increasing hybridity, the move towards smaller ensembles with multi-disciplinary performers, circus artists being recruited into other artforms such as dance and physical theatre—I argued that graduating circus artists need to be more equipped now than ever before. They need to be highly skilled technically, creatively and aesthetically with a broad range of approaches to how they learn, adapt and create in a rapidly evolving industry.

The central proposal of my thesis is that a new integrated teaching approach addresses these challenges by balancing the positive aspects of direct training—such as breaking down and building skills, safe progression of learning, building foundational knowledge—with the innovations Decision Training can introduce into circus training—such as the cognitive engagement of the student, collaboration with the teacher, and life-long skills such as self-assessment and self-regulation. I see the outcomes of this study as a step in the process of re-imagining contemporary circus and what circus artists are and can be in the future.

This research project has brought together my passion for the circus arts, learning and teaching, and the ideas of action research. To return full circle to the Australian action research pioneer Ernest Singer's question that was the catalyst for this thesis and has informed it throughout, "How can we make what is happening now better?" (Stringer, 2014). What has emerged is an answer to that question, and some practical recommendations as to how to "make what is happening better".

To retrace the steps of this thesis, the research problem was that there has been a lack of attention given to the development of cognitivist pedagogies in circus arts training generally, and specifically at the NCS, and that there currently exists a predominance of traditional behaviourist methods of training with an emphasis on linear training progressions, and direct and immediate feedback delivery and instruction that favours the external motivation of the student.

My argument was that this traditional approach to teaching might not be appropriate as the sole pedagogy for equipping students with the necessary skills for thriving in the increasingly diverse performance contexts of contemporary circus arts practice, which is now more hybrid than ever. Contemporary circus now encompasses a range of work in which traditional circus skills hybridise with visual and physical theatre, performance art, contemporary dance and street theatre. Potential employers are now seeking self-regulation and self-efficacy from circus artists, combined with the ability to collaborate and develop new material.

Therefore, there was a strong case for investigating a different cognitivist approach to teaching physical expertise in the circus arts, one that focused on the development of self-regulation, self-efficacy and cognitive effort. Using the NCS as a locus, the lived experience of three case studies of teachers and students from diverse learning and teaching backgrounds was investigated. Three research cycles were used to collect data and to collaborate with teachers on developing Decision Training plans to promote a specific cognitive ability of their student. This was put into practice by the selection of a combination of Decision Training teaching tools focused on practice design, feedback delivery and instruction in exercises that replicated performance-like situations.

Through doing this research I have come to see that learning and teaching in the circus arts lies somewhere between the type of learning and teaching that takes place in sports and in the arts. This research took place in an elite training institution where high level, often extreme, physical skills are a prerequisite (as they are in sport), as well as the development of aesthetic and creative skills. Therefore one key research finding that has emerged is that an integrated combined approach using direct and Decision Training has the potential to work well within the spectrum of practice involved in elite circus training. At the same time I am not proposing a combined approach using these two methods is the only way to train circus artists at the NCS but that it could be used effectively in the mix of teaching practice already going on at the school.

As part of this research journey I immersed myself in the historical perspectives, theoretical and scientific theories, and practice-led research that underpin Decision Training. I studied the origins and applications of action research that is the methodology of this research and was exposed to the research domain of learning and teaching styles theory, which has emerged as an important component of the research findings.

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Appendices

Appendix 1. Transcribed Interviews

Appendix 1.1 DBS 1.01

Nov 23rd 2011 Case Study 1, Interviewer: I1, Interviewer: I2, Student 1: S1, Teacher 1: T1

11: ok so this is the first for real this is where we can actually use the data everything's been cleared so it's really good. So the questions we're going to ask you are based on our observations where we watched together (indicates himself and I2) a session and some of the things just through talking with T1 about your plans for the next couple of years and also to do with how you use the role between you and T1.

...and remember that things are going really well...this is not/none of these questions are at all critical of the situation we're just looking for ways that we can ...use changes in the use of decision training tools specifically to evaluate a change in your behaviour...so it's really important that you don't see this as like we're...(does a "critical analysing you" gesture)because ...obviously T1 is very happy with the way things are going and the rapport is very good between you. So...

we were interested firstly that/ T1 said that you have a three year plan that you want to follow at the school?

S1: yeah .. yes

I1: Do you want to talk a little bit about what that plan is?

S1: yeah I don't know if it reallyoh I can take three years...but it's plan anyway even if I will not be there it's a kind of plan I would like to follow.

I1: yes

S1: Now in my work I /this year for me is like..

...I knew before coming here what I wanted to do because I already had done some researches in ESAC Brussels and then coming here I knew the directions I wanted to take so here I'm just digging in two research directions I want to dig ..this is the plan for this year. Now I am like experiencing the first research which is manipulation without sticks.

I1:yes

S1: For the December presentation and in my head the April presentation with two pairs of sticks...

I1: and no diabolos.

S1: ...one diabolo and two pairs of sticks.

I1: oh ok one diabolo and two pairs of sticks.

S1: Mostly one pairs of sticks alone, two pairs of stick and two with a diabolo.

I1: ok

S1: Really really which is using two pairs of sticks.

I1:Like so they're parallel with each other?

S1:What?

I1: Two pairs of stick and two strings?

S1: Maybe you saw me doing this thing?

I1:Right ... yes

S1: This is this kind of research....

I1:Ok

S1: For me the long term is to really join everything so all those things I already have with like ...the work I already have with like one, two , three diabolo we work the tricks..four diabolo which is kind of the only like...

...classical technical things I work on which I am going to try also in December. I1:right

S1: so the objective is really to work my researches this year and then to be able to do trial in second year and in third year I could have something mixing everything. I1:So you already had this sort of planned before you come from a long time .

S1: Here I am supposed to be here for three years so that's why I want to like do it in three years but wherever I will be.

I1:yes

S1: This is the thing I would like to follow and (something indistinct) realising this in the time of it's going to be like enough or too much in three years I don't realise but I ... I1: you can adjust the plan.

S1: I can adjust and I have in mind like an idea when I will be a really older artist will be to do just one show with my diabolos and me

I1: right

S1:Something I feel everyday ...I really discover every day the form its going to take...because I don't realise the research is something I do not realise how far I can dig and how long time it's going to take and then to put it on stage is also a step very important so I just go with some presentation that ...brings me some ...hurry up...urgency?

I1:yeah ...a deadline

S1: yeah.

11: Just with your piece... while we're talking about your piece for December.

S1:oh yeah

11: You are playing with manipulation of diabolos ...just then suddenly in the middle, is it in the middle?..you have the (four) diabolos so why what's the idea behind suddenly the four diabolos?

S1: For me this presentation I ...know I had to do presentation so I just take it for me and I look at what is useful for me to try to present ..I have I match different pieces of sequences different ideas different music and ambience ..I just put it on paper and try to match everything and for me it was also the moment because I want to try 4 diabolo on stage.

I1:ok

S1: It's something...

....I've been working on like maybe now one year and a half everyday and I feel like it's not really improving as much as I would like so it's also a challenge to work harder for one month or two to see if I am able to improve it like this (make fist with his hand)...Because when I was young when I really improved my skill in diabolo it was when I spent all my day doing diabolo so I am trying to do more to see if I can improve...

11: so this ...moment where you go to four diabolos ..do you feel like the they'd be pressure on you to put something technical into your presentation in December? S1: Sure it's a challenge for me but I really know that in this school this is going to be very the moment everybody is going to you know to maybe/ nobody sees for me how technical it is to do a few manipulations and do like 3 or 4 but for me this is very hard to not to drop them so for me...

I1:...that's technical.

S1:4 diabolo is not the only technical point ...

I1: yup ya

S1: ..but yeah this is really ..I know T1 and everybody is going to be very sensible if I drop or not but even if it drops for me it's not some big problem..

I1: I guess what I'm asking is do you feel there's an expectation for you to do a classical technical thing with four diabolos in your presentation like could you do the whole presentation without doing the four diabolos?

S1.mmm yeah

I1:..but you are putting the 4 diabolos in ?

S1: ...because for me it's the time.

I1: It's the time to do it?

S1: yeah I use this presentation to try.

I1: To put pressure on yourself?

S1: ...yeah yeah

11: ya to do it....Just talking a little bit about the role of T1..ok. This is just a general question ...what do you see the role of T1 as? You've spent a month or two now working with him everyday ..so what for you is his role in relation to you?

S1: He's a kind of guide? I know it's different from the other relationships from coach to student.

I1: yes

S1: And maybe I'm sure because I already know what I want and I have like an experience in diabolo I already have all the like technical tools maybe other jugglers are still looking ..

....for when they are in school. T1 knows I am here to develop my thing and he just guides me in it.

I2:Me I want to ask a question.

I1: yeah great.

I2: What is a role of a guide?

S1:Maybe I am when/ because I am in my thing (makes a bubble shape with his hands) I sometimes need some distance so ifat the beginning we talk about like a way to follow and maybe sometimes I don't realise sometimes I do that (something indistinct) and he gave me an external eye outside an external point view and lot's of ...things I like advices I cannot see or really (indistinct) of work I don't really know like he ..I know

T1 knows a lot about proprioception and different ways to ...increase skills so he opens my ways to work

...maybe if I would work alone I would do something always the same you know and it is worth for me that T1 makes me go out of my habit..

I1: My box or ..

S1: ...box habit because it's going to make me discover all the things I would not discover alone.

I2: Can you give me a specific example of a moment in your classes where ...you feel T1la really played the role of a guide and can you be specific about one moment?

I2: I'm just looking for an example of a specific moment.

S1: yeah for me he's been very useful ...we talked a lot about presenataion..

I1: Sorry..about?

S1: We talked a lot about this presentation in December.

I1:oh presentation ...sorry.

S1: ...and he's for me he's been really guiding me when he told me "ok now we know what you want to work on and to do this here is how I propose you to work". So in the

first part of the class you really warm up your 4 diabolos and then we work all other all the other sequences of the act.

....and suddenly always to like to try my 4 diabolo I do a sequence with manipulation and tak (mimes grabbing sticks and 4 diabolos) I try my 4 diabolo...always to work like this. This is something maybe I would not have the idea to do but this is really what I need to do if I want to in my act do manipulation then up in front of people. I1: ...and suddenly bang.

I2: So really you're doing your act and he's telling you "ok now do your 4 diabolo"...is that what I understand? Maybe I'm not ,...what you're saying is that he's suggesting that you introduce the 4 diabolo inside the...

S1: ...yeah in that I always work my 4 diabolos like ok I have no time to warm up and I

I2: Do you do it separately?

S1: Yeah but I never do I am cold now I do 4 diabolos and on stage if it drops it's because on stage it's because it's going to be like maybe I'm running and now I have to do it. It's not like ok I am going to warm up and do 1, 2, 3 before 4 diabolos no it's right now so it's / when I work I do a sequence I do something and suddenly I just do it. I2: And does that happen, you know when or does it happen randomly?

S1: It means to be like everytime i end a sequence I do it but sure when I am in my sequence often I forget so it's when I think about what is the time...but I try really to do...sometimes it's like when I am still writing my sequences and where I'm going to maybe diabolo roll and how I'm going to work my back and everything and sometimes when I just like I do not find a good thing I just do 4 diabolos...it's when I think about it (laughs).

I2: ok good

11: So ...we were interested to know how you see class like the two hours that you spent in the formal class with T1 you don't do/ well from my observation because I only look at two/ you don't do the classical technical your repertoire..

S1: Meaning usual class without thinking about an act?

11:Well no no now ..you practice your repertoire of skills/ you know your repertoire of skills?

S1: yeah yeah

I1: ..outside of class...like in the evening?

S1: You mean the usual schedule?

11: yeah your usual program you practice outside of class?... your repertoire..and so in class what's your objective in class?

S1: For me it's the same I do my program but the class time is not enough ...if I really/ I really want to

S1: We talked a lot about....

I1: ok so the question was: you tend to practice your program outside of class so for me what's the role of the class for you ... what's the function?

S1: For me the same like in my program there are really like there is space for my researches there is space for my 4 diabolo like my technical classical thing there is place for when I discover my things which happens a lot. There is place for doing my sequences in different ways like it's not about repeating some things to have one perfect shape ...my program is all that ... it's not just technical things ... so for me the diabolo class is the time to work on all these things ... but the problem is like if I only do diabolo in my diabolo class I would take maybe four 3 or 4 classes to do one time my program and I have time outside and for me as a juggler you need it.. [00:01:21.725]

..two hours a day is not enough if you really want to increase your skill ... for me it's very natural to the rest out of the/ and often like if I work alone only ... two hours I'm going to do more than what I do with T1 because with T1 he always notices things and we stop and we talk about things and he wants me try different things so I do not go as far as I would go alone but he brings me things I would not I would never notice or find alone so...

I1: ok ... ok we're going to a specific situation which we're really interested in. The last time I observed I told ... I mentioned to T1 we would like to see some video feedback and so he asked you I'm not sure if he asked you "do you want to use the video ?" ... and I couldn't hear the answer so what did you say?

[00:02:20.000]

... to him because I don't think you wanted to use the video?

S1: I think the thing I repeated to you after like ... I know I have I always know I have this tool just in my act work I prefer to do the step after but in yeah but in the usual class I would like use it more often but just in creation I prefer like to judge myself or see everything after ...after my own feelings and they way I see things you know from the inside ... just that.

I1: So just talk a little bit about your ... you have a question? (to I2)

I2: No no go ahead.

I1: No go go for it. ... I am interested in the process of getting it right on the inside first before looking at the video ... can you explain a little bit more about that?

S1: I know if I start to check how it looks with the video I'm going to spend really a lot of time with that ... I'm going to be not obsessed but you see what I mean ?

I1: yes

S1: ... like to always look I know if I start now it's not going to end and I don't want to do something from outside I want to it from inside and after like to correct the conscience I have of my movement or things with the video ...

[00:03:45.000]

I1: so you often will change things after you've seen the video?

S1: yeah yeah I think I don't know ... it depends on what I see

I1: yeah oh yeah

S1: sure I know my conscience ... I don't have a very ... my conscience is not perfect so I ... very often didn't feel that and I was like this you know so ...

11: right you didn't ... um you're quite obsessive aren't you? ... you have to be to be a juggler ... you talked to me about addiction with juggling ... like it's addiction? S1: yeah

I1: and so with anything you start doing you can get obsessive about it?

S1: ... yeah but as I grow and I get older I have a distance with that ...

I1: oh ok

S1: I know I have this thing to go really deeply in something ... if I have an objective I really want to reach it ... I can not stop before you know...

I2: I want to go back to the video ... you make it sound you have experience working with the video ...

[00:04:46.662]

S1: I do not have a lot ...

I2: Tell me about your experience when you worked with the video in the past?

S1: I didn't work a lot ... I observed people working with it and I observed how they/ sometimes it becomes really like a mirror/ yeah first of all before video I used to train with a mirror and then I sure I fall on very like classical things or ways to move very like ...for an example I was ...one of my sequences I have which is more like with straight legs and beautiful movement i worked with a mirror when I did so it's not really movement like from here (indicates his stomach) it's more like how it looks and so I really noticed the impact it has on the way I do my things and I it's not the way I want to work I want to do my own things you know and to be conscient (conscious) of how it looks but I know if I start by start by this conscient (consciousness) of how it looks I'm going to..[00:06:01.065]....do everything with respect of that which I do not...and then I had to do a video for auditions in France and then I did I filmed me ...this is the only really video experience I have on me..and no I also have a few acts i just watched one time and I'm always surprised oh it's not how I was thinking and that's it...and really in I think it's mostly last year in ESAC ...

I2: in where?

S1: ESAC in Brussels we were creating a show with all my promotion and the guy who was like directing us ... sometimes I really notice a few sentences of people which really a mean a lot for me and I keep it in mind a lot and I remember one of my friends asked him if we could ... he was like filming for him to direct and to see the different things and when I first asked if we could see it and he was like "for me it is not useful to do it right now"... and we were doing something about our feelings and our emotions on stage and so he really didn't want us to pay attention to how it looks first and for me it was very meaningful [00:07:31.065] ... and so that's what I keep mind ... video as a nice tool but not something to focus on at first ...

11: mmm ok ... we're at half an hour that's good for us ... we're still thinking about how to work with you ... because you're a bit of a challenge for us but that's good that's really good.

I2: you understand why he is saying that?

S1: what?

I2: you understand whey he is saying that?

S1: Yeah yeah I think.

I2: Why we are challenged?

S1: I think.

I1:Tell us why you think.

12: Let's just clarify that ... the whole thing with decision training is to make the student more autonomous ... but you're already very autonomous so ... it's a good contrast to the other students ... it's interesting to compare.

I1: To challenge us.

S1: It's juggling and juggling is really something ...usually you do on your own first...

I1: So in-built into the discipline is a kind of autonomy ...

S1: yeah yeah every juggler here really works outside ...

I1: That's a good point.

S1:It's often something you started to do very young and not something you just discovered here.

I2: I have a question for you actually when you talked about the other program which you run your technique research and that ... how did you come up with that program? What were the ... how did you choose to do things like that? Are things divided equally or do you spend more time on research or...?

S1: No it's like I do not do / when I say I have space for like research for ... it's not research technical and maybe movement no it's really like I have it's often I just have my tricks my sequences my things establish my concrete things and when I work on my tricks with diabolos it becomes a research because there are lots of things to find and when I practice that...

[00:09:36.065]

...what I could do ... what I could discover ...

I2: So it's all mixed?

S1: It's all mixed ... when I do my sequences I know I am moving so I take benefit of that to try to move in different ways ... it's not like separate like that ... I want to keep the conscience in the space for everything and for me the 4 diabolos is really a part like I still have the/ I think I also love diabolo because when I was young it was like addictive to just throw diabolos in the air like just keep this pleasure..

I2: And going back to your program just for a ...how do you know you went through your program? you know you say you said earlier if I did my program it would take many classes?

S1: mmm

I2: ... so is there a moment in your training where you feel you've done the program cycle...you understand what I mean?

S1: Yeah I have my paper with my one stick two sticks one diabolo two diabolo three diabolo four diabolos like really that...when I do everything go back..and often I do not do that I do like depending on the time I have and everything and do that and often T1 wants me to work on something and not what I planned so I do that that I know that the day after i have to do that maybe if I have time I still do that and that..

I2: ... and what you are saying this this that that ... it's a ... different situation ... one stick one diabolo ... 2 stick 2 diabolo..so they are classified a little bit the diabolo situation? S1:It's just that when you want to put on paper everything you work on.. [00:11:26.065]

...this is the way to decide but I do not like work on different ways on everything ...I work the same way just i need in my head to clarify a bit to connect it better after ... that's all.

I2: Do you have it on paper? Do you think we could have a look at that?

I1: The "mega file".

S1: (gets his program file) ... but now I know I want to do a lot of research so I needed more papers so I did something ...

... (to I1) I think you saw my program?

I1: yeah ... I'd like to see it again..it keeps expanding.

S1: I had just one page ... now I have ... one diabolo this is just really ...

I2: yeah a code yeah

S1: ... my code my research with all the tricks manipulation two diabolo manipulation three four one pair of sticks two pairs of sticks...

I2: ok

S1: and then one diabolo with two pairs of sticks, two diabolos, three diabolo, four diabolo with one pair.

I2: then you make a list of the tricks you find..

S1: yeah this is the tricks I found and I have on the first page all the sequences I found this year with T1 we worked on sequences everything

I2: ok ... so when you say you do your program ...

S1: (continues showing more papers)...

I2: ah there's more things ok there's more sheets there...so when you say you do your program you make sure that you do every page ...

S1: I do like every page ...

I2: ... and then you start again.

S1: There are things I found but it's not always something I really work on it can be ideas like I find a system or something with like two diabolo and I just don't want to

forget it so I write it down and maybe for an act or for something i try to adapt it...mostly the tricks are in one diabolo here...there are (indistinct)..

I2: ok

I1: Thank you

I2: Thank you

Appendix 1.2 DBS 1.02

Dec 8th 2011 Case Study 1, Interviewer: I2, Interviewer: I1, Student 1: S1, Teacher 1: T1

I2: So let's talk about your evaluation of the result. I know it's fresh. I have several questions. First of all I want to know did you feel you were well prepared to present that? Did you feel your preparation was adequate for what you did?

S1: ah...when people ask me these few last days it's very hard to answer because it will never be ready. It's like a step every time. It will never be done. It will never be "ok now it's ready."

I2: Is that a statement for everything you mean. Every number? Or just this one specifically?

S1:ummm

I2: You know what I mean? Is that a general statement for numbers in general? S1: It's different for each number. For me there is no two acts the same. So I know for me that when I/ I always have some things to change or to do better or to correct so it will never be "ok this one was perfect". Nothing is perfect for me. So it will never be perfect. So for me just how/ where am I now? To present what I am going to present. Sure I could say "no I am not ready." But I will never be ready. So now I am ready for this one in a way because that's where I am.

I2: I guess let me ask you a question differently then. Could you have been more ready than you were?

S1: You mean with the same time? Just today more ready?

I2:With the same time?

S1: Maybe if I had worked in a different way you mean? Maybe today would be more ready?

I2: If you had worked differently or had different objectives or ..?

S1: I don't know because I worked in one way. I didn't try others so I cannot tell. I2: Yeah it's hard to compare.

S1: This time I worked. It was kind of different challenge. I wanted to put in my research with manipulation. I had not concrete ideas of how to put it on stage. So now it allowed me to try this and to give a shape to things which were a mess for me and were not ready to be in my formal work. So now that's good and the 4 diabolos always I wanted to just to try it on stage because I know that for a juggler especially it is always different. You can succeed in training and never on stage. So I wanted to try it. Whatever even if it falls or if it is success(ful). I just wanted to know. I wish I could

have more trials to have like a statistic you know.

I2: More trials in front of the public? Because that was one.

S1: It's always one so you cannot really ...take this result as the result. I2: Right

S1: I would like to have others to see what worked this morning, which doesn't work every time. ...I know in this result there are things that will be the same but lot's of things depend on this morning this only morning, not tomorrow, not yesterday.

I2: So it's hard to judge the numbers from that one presentation?

S1: yes ..about if i could be more ready?I cannot tell.

I2: You couldn't tell or you could tell?

S1: No I cannot tell. I don't know if I could be more ready or less ready.

I2: If you, I guess it's a little bit a similar question, but ...did you have ...I guess you have objectives for these sessions? Like you want to explore and all that. Can you do a comparison between your anticipation and the result? How does it compare? The expected and what happened?

S1: I think since the beginning I was not really like "ok I want to do that. Is it going to work or not?" I wanted to. For me everything is a process like something in a conscious way. Like ok I want to try my 4 diabolo, my manipulations. But also I know that what I put on stage is always something I do not realize. I am on a kind of a path always and now it's going to be all those things that come but I don't know what it is I am going to try.

I2: ok

S1: Sowhat was the question again? (laughter)

I2: The question was comparing what happened to what you anticipated.

S1: I.....it's always a little surprise. It's nice to see when I create something it's always like because you have conscious things that you want or there are things that you/ I am like "ok I feel that. I have small ideas but between those ideas or in my mind those ideas mean something I do not already know." So i want to dig those ideas so this thing which is behind comes. In order to discover what there is behind. So yes I wanted to try my 4 diabolo, my manipulation and everything but for me which is interesting now is what came and what happened.

Because I was not before doing that I was not conscious of lots of things. And I am still not because it is still hot and I need to take a distance to see it on video and to make all the feedbacks in my mind like "ok that's it." (draws a whole circular shape in front of him). Yeah but for me it's interesting because as I already said I am not always very conscious of where I am and everything. So now I just went into the process and now there is a result and this makes me situate myself.

I2: It becomes a reference.

S1: yeah yeah

I2: Do you have like maybe again it's a little fresh for you to have a distance but when you say there are things that surprise you do you have an example of what you did this morning during the presentation? Is there an example of something that you became conscious of that you were not conscious (of)? Do you understand my question? You said that there are things that you knew, you know the 4 diabolo, the manipulation. Those are things you expected. And you say but there are also surprises. Is there one moment you felt was different or was a surprise?

S1: Maybe I have just to (starts to replay the performance in this head for a while) just go back in and see what happened.mmmm.....when i try to remember what happened quickly I realize that I was really while I was doing things I was thinking about lots of things tak tak.

I2:Thinking ok.

S1: Soah..there were also surprises. I need a distance to...Because there now what I have is "ok my 4 diabolo didn;t work", so I realise that it's much harder than what I thought. It's not the only thing I think it will be....

I1:Can I take you to a moment maybe?

S1: You mean in the act?

I1: yeah where you have the 4 diabolos in your legs and you roll back and up into a handstand. Did that surprise you that moment?

S1; yeah kind of yeah.

I1:It was the first time I've seen it work.

S1: ok yeah yeah

I1: Was that the first time it had worked?

S1: No it worked yesterday and rehearsal this morning.

I1: Did that surprise you that moment?

S1: This and when I do the wave? Those two things are a little bit acrobatic and for me it was also the moment to put them. Because in my acrobatic skills and research it was the moment to/ for me this act was an opportunity to make it solid. I could work on it for years and not really make them better or fix (them) still. I used my act to say "ok now I really have to do it in my act." So it makes me work on it.

And now i know I can do it. I know it's like ok for me. This is a skill I have. Without this act I would be maybe until the end of the year working on that and still not knowing yes or no I have it really - sometimes it works sometimes not. Now it's (indistinct) today I have to do it so it worked.

I2: It creates a deadline to confront.

S1: Yeah yeah This, those acrobatic things for me it was a good surprise this morning that it worked.

I2:I just want to go back to when you say "I was thinking." Were you surprised that you were thinking?

S1: Not so much. Because it's not first time it happened. Often when I do an act. When I present it i do not have as (much) fun as when I do it in my rehearsal. I am not as alive as I would like. I am thinking about myself. I am like looking at me doing the act instead of being in the/ inside it.

I2:So that was what was happening today?

S1: Yeah that was what was happening. And that's something which is not proper to me like (indistinct). But this is really the thing I want to work on because I realise a lot now this morning when I see everybody and me that the aspect that needs to be more and more worked on is that. How you feel on stage and how do you deal with what you feel and what you want to express. For me this is . We do our tricks our things we have to go there there but it's not alive. I think I, through the process, it was nice for me because I really kind of the first time that I really feel good in the emotions I want to do and I really feel I can dig my things to explore different ways to do each of my sequences. To be inside. I really worked on it through the last months but really on stage it's very different because this is the result with expectations stress and everything. And on stage i am still like I am not alive. I thinking about my things. For me what I want to reach is really how to get back to the emotions I created and I want to express.

I2:ok

S1: Because I was a little bit like "I have to show them now." At first it comes from me. I created for me from my feeling from who I am but now I have to show them..show it. Ok it doesn't come anymore really from me. I know the shape it takes so I am just trying to show this shape but I do not do the process for me and to the audience. That's it ..the problem of being on stage.

I2:yeah like you say nobody feels that. But it's something you want to work on...good. S1: It's really what I miss I think maybe in the structure of what I want to...

I2: It's something you miss?

S1: yeah I would like to have the tools to work on that. Because it's very important. Now in the process I worked on not only technically but really how am i going completely to do things na na na and never. It's not ... I don't know.

But with T1 sometimes I wish he could give me feedback on it but I think he was just trusting me to deal with my feelings and i think he saw me like getting better and doing my own job and doing well. As I say I am digging in each direction and was like doing my job and maybe he didn't want to come in(to) that to disturb that. So that's why I think he. Or maybe it's because he did not feel like giving the basics on this aspect. But really this is what I want to work on. I am happy to have worked on it alone because it was really like me and everything. But in bigger process for some shows or something I would like to create later as an artist. Yeah I think this is what I want to do on stage. It's not technically new. I want to (indistinct) or everything. And this is the aspect where alone is hard. I need another point of view to. As I said I need a small conscious of myself people who tell me "now you are like this now you are like this. Pay attention to that. This is how you think you are but this is not your thinking (something indistinct). I2: So if I say you need to connect your feeling with the form. You need to. How you feel needs to be coherent with how you look. There needs to be. Because you talk about the outside eye.

S1: For me just that it's from me from inside to outside. And when I'm on stage what people see is just outside. So often we are like "ok we have to make a beautiful outside." But we cannot do it if can't go by here (indicates inside himself). Just that. I don't know if it's a connection between shape and inside. It's just way, a path. Just to always go by yourself and your feelings. How you feel to make people feel like you. I2:yeah I just want to go back to T1. I'm borrowing on your question (to I1). I1:That's alright.

I2:But you say you wish T1 would have participated.

S1: yeah that's what I kind of missed in our creation. Feedback about the energy, my way to act, my na na na, my way to be on stage. It was like / I don't know if I consciouI2y wished. Now when I think about it I don't know if I really wished because working alone like "ok i have no help" is useful but i now that sometimes I felt that it would be nice to have feedback because now i don't know really what to give. i am very well in. I am like "ok" I have fun and I think it looks good but i was anticipating what often happens that when I look at me I realise oh I was doing that. Not what I really want. So to help me to do that.

I2: There was ... I am sorry Jon...

I1: No it's fine there's no problem.

I2: (to S1) It's because each of us had prepared questions.

I1:Yeah it's fine (to S1) because when you talk you go into..

I2: yeah we're leading exactly to ...I'm continue on that. Because there's the video feedback, there's T1 feedback and what Jon observed towards the last month is that you started using the video more and you start using T1's feedback more. That was an observation...

I1:During the...when you were in these four weeks you were concentrating on the act you were asking T1 for more feedback and you also started to access the video a lot more towards the end. And those things I observed more frequent than before.I2: So now that we say that and what you just said that you wish there was more

feedback. That you knew more about the outside. How do you?

S1: For me it's quite logical. Because I know in my everyday work my usual training it's about lots of things that are long term. And they are...all the sequences i work on like vocabulary is already like built. So now I work on really having it like eyes closed and very well I'm working on that. It's not new things it's only things I need to work on a long period so I can have really like mine. So I do not have questions or I know that I just have to do and to work on it. To go through it in many ways to have really it for

me. When I create an act it's about giving a shape to things I have so there are things I create and I need to deal with my consciousness of things so how does it feel for me and then how does it feel to compare my point of view to this point of view to make the thing as good as I can. For me it's logical to ask T1 more.

I2:But did you ? Yes ok so exactly that you saying you are using T1 more because you want to have that outside eye point of view. ok. ...

11: I'm just interested in your process of making work. Your process of creating your act. That for it to be yours it has to be a long term process? For you to feel ownership of your process of your act it needs to be a long term thing. Nothing is new. Say you were doing an act today. You did an act today. Everything in these 4 weeks there was nothing new, well there was one thing new, but everything was worked on. Your vocabulary was worked on before.

S1: kind of.

I1: kind of?

S1: not really.

I1: Ok it's just that when you say...

S1:I wanted to use things from my research I did in the first period of the year about manipulation. I wanted to use those tools. So yeah when I do my manipulation tricks I used that. But really for me the presentation was the opportunity to work more on a few of them to really try them on stage.

I1:But say so ...for it to be yours it's always a long term thing. You know it takes a long time for it to be yours then you put it on stage ...is that the process?

S1: mm not. What I feel is that when I do one act I always feel that it's never boring I could work on it so much so much because I have this thing to be a

perfectionist and I will have fun to work on it for 10 years. Maybe I exaggerate. This is the way to work. And I know I also like to do one shot things.

11:Ok tell me about the one shot things. Tell me of an example of a one shot type of process. Where you get an idea and you perform it right away.

S1: Last year in ESAC it was a like one month creating characters and we were a group work to present something in the street and there were lots of things that were not all prepared that we didn't know how the weather was going to be. It was for the carnivale. So we have to deal with who is there in the space. Lots of things we didn't have control of it. But we prepared to react. To be one shot to be one time. What I mean is sometimes I like also to have "ok just 2 days to prepare something ...what am I going to do?" It's not the same process in my head. I think it's just (indicates a shrinking action with hands). It's the same to way work often. I know I don't have the time to really (think) about it concretely in a conscious way where I am why do I want to use (this) for this time. It's more instinctive. But it's the same thing. It's always a small idea with there is a lot of things behind. So when I have a long time I have lots of small ideas. Some I can see very well. Some I cannot really see. Like for me it was clear the manipulation research which moment to do that. But small things like my acrobatic things or the mood I am in. For me it's not random that I do it now in this period of my life. For me it's being in smaller ideas and there are things behind and when I do something short they are not clear at all. It's very small I cannot really see it but I know it means something. I don't know what. There is something. It's more like ...scarey. I1:Scarey?

S1: I really have less. I don't have concrete image of what I'm going to do. Because I cannot see what it is what it is. But I put it together I don't know what is/ how it looks but. And when I have more and more time it's more clear to me i can think about what there is behind.Maybe I can do expectations - ok I think it's that.

I2: When you say you have something behind. What is that? Can you have an example of movement and you know you have something behind it.

S1: (thinks and mumbles to himself)

I2: or a trick or a moment? Because you say have ...it's very important for you to have ideas and then there's something behind the idea. I want to understand that more. S1: Maybe ..there is something that i want to express and so it takes the shape of an

image. The conscious image I have from an unconscious thing. Is that image. It's like a symbol of ... it has to take a shape so I can realise and have a consciousness of it existing.

I2: can you give me an example then?

S1: An example?

I2: If it could be even from the act we just saw?

S1: yeah for me an example in the act. I had this idea of. I didn't dig it very much here but the idea it's like being a kind of this story of a spider, it's a song by Thomas (indistinct) and last year I was very inspired by this. And I would be often like being on the floor just with my diabolo figuring myself as spider and moving like spider like that. When I say in my head "ok the spider on this music" this is the thing the image. What is behind I cannot really tell what it is. But i would describe it as the pleasure I have. I don't know why because I (something indistinct) but I know that I love this mood and it talks to me. It's very meaningful to me. I don't know what it is.

I2:The physical ...

S1: This for me takes the shape of "ok i am going to do like a spider on this music." I2:So the image is the spider but you feel there is more behind it ?

S1; yeah it's just not a spider. The spider is the image. Which things are behind I do not know them it goes through you know. It's the shape of this I don't know really what it is.

I2: The image I have is an iceberg, so there's a little bit showing outside and then there's a lot ...that image speaks to you? I don't know? It's like there's something that's apparent, the image of a spider, and there's everything...

S1: For me it would be more like ...something (indicates a small opening with hand) that everything I have can go through. Like it's a way to do it. LIke doing the spider is a way of expressing what I have in me.

I1: A portal.

I2:A portal, a door, a gate.

S1: yeah that's more like it. It's not like i do lots of things and then I just show one thing which is representative . No it's an opportunity , a pretext for (french). For me this morning I didn't just show the spider I showed everything I had through the spider...

I2: (to Jon) You want to talk about this moment?

I1:Well ...there this moment that's like a piece of illusion at the very beginning.

S1: Did it work this morning?

11:It did when you did this. You didn't blow it but it worked because you were doing this and it was moving in the opposite direction and it was very funny.

S1: ok (laughing)

I1: Tell me where did that come from?

S1; From T1 directly.

I1:ah ok

S1: Like at the beginning I had my I was like really doing soup. Like I have a problem I am on the extremes and on another one. So I was doing something (mimes something very indistinct).

I1:I love the way you call that doing soup.

S1: Yeah it's really bad. And then ...soup it's like you mix everything and then And after I was "ok I have to write something concrete." So I can have the support.

I2: Get really support or more like artistic support conceptual support or..

S1: Metaphoric...

I2: Metamorphoric support ok.

S1: So I can instead of doing "ok I'm looking for a kind of mood". I am going to have to decide concrete actions or things to look at to go through this mood and have it. So at the beginning it was very soup, after it was too much written too much intentions blah blah blah "you cannot understand what happens. It's too much for the audience and for me also."

I1: That was T1 saying that?

S1: yeah T1 told me that.

I2: Ok T1 gave you the feedback that it was not clear.

S1: Yeah and it joined my conscious. ...Then I tried to do in between. But when I was too much he had already found this (indicates the visual trick) and I found it very fun but for me it was already too hard to write everything I had written. I didn't realise already that it was too much. And I was for me it was very hard to create this to write it was very (indicates hard work in the head). Now this is what I want to do. I want just to do it to go through to go through to go through. Because now it's not habit enough. I2:Are you talking about the sequence of actions?

S1: ya

I2: You needed to go through that?

S1: ya I was like "i look at this one, I smell this one, I touch this one". It was too much precise.

I2: So there was no space to add?

S1; For me there was no space. And it didn't come from me also, it was from T1. So I was like. And then when I realised it was really too much. Too much things. And it was too hard for me to go through in this time. Maybe if I have a year I can go through go through go through and do it without having to think of what I do then. But I still have to do and I felt that today I still have to think about it. So I said "ok I have to do something in between." And something in between gave the place to this thing. I2:And it's this morning you decided that?

S1: No no no. We (indistinct) told like this week. I already knew. I decided it last week. To do something in the middle.

I2: So it was an alternative moment for the transition there?

S1: yeah for me it was. I don't know if it was a transition. It was maybe the good measure because it was too much soup (indicates on one side) too much themes (indicates the other side). (Indicates going to the middle). I know that I am too much like this (indicates reaching to extremes with opposite arms).

I2: Can you remember the moment you decided "ok I'm going to do that". This little moment (indicates visual trick). Can you remember the precise moment when you accepted the idea?

S1:(thinks)I don't know. I was without knowing it I was already thinking about it. Maybe I could put it. Maybe a few inputs were.....

I2: Because let's go back. You have your thing and it's too much you know it's too much. And then you say I'm going to do this.

S1; I think it's a part of my brain I do not have control on you know. It was not a precise moment in class with T1 "ok oh yeah you're right." No it's not that. It was thinking about how am I processing. In my life when I I2eep i don't know. In my thoughts in a

few days come not like this (indicates a single moment) but goes I2owly (indicates time passing).

I2:But there was a moment when you did an enchainement.

S1: And after I got a reaction to it..then telling T1 "ok I'm going to keep it." But I cannot remember when.

I2:ok

S1; Maybe when I broke my ankle, I don't know I couldn't tell, maybe when I broke my ankle I had more time to think about (it). And I could figure out my act without doing it. Maybe it was (indistinct) ok. But I think since the beginning this thing for me was. I told T1 no at the beginning. But for me it was a hard choice to say no because I was between "ok for me it's really important to do what I have written." But I found it very very fun and very nice. So for me to say no it was a choice already. It was not like 10 percent no. It was like "i have to choose I say no for the moment." But I still have this thing that i wanted to do one day. I said "ok I'll really keep in mind. I will do it because I love it but just not now."

I2: And from what I understand it is because you have decided the sequence you've written that becomes. You become, if I use the word "loyal", to it. Loyal to your idea. You've decided a sequence and if something new is introduced you're like there is conflict between the loyalty to your first idea that you want to continue.

S1: I think it's because I feel very if I put lots of things because I don't have, I don't know the word in English,

I2: reference marks ?

S1: I do not have enough reference. That's why I really want to write everything. To feel like "ok I know where I am and I can be safe and go through my things without stressing." But I am obsessive and I do too much. So when something goes like this (indicates something coming in from the side) I feel like it's going to break my reference. I think that I still that i am working on having reference and something is just going to kill before i can reach it. .. I feel like I need to appropriate it to after think about something. It's like really a step for me to put this. And often T1 is like he wants he has lots of ideas and motivations so he throws in lots of things. I need to work step by step to really do. I take note of what he says because I know that later or maybe out of the school I when I will have reached one step I could add something. But adding everything is often too much for me. I have to focus on one to have a reference on it and then to add another one. But at soon as I knew it was too much reference I had to do something more simple. It really gave a place for. It was like logical for me. It was not. To put it after was not a big choice for me it was kind of logical.

I2: It had to happen. ok. Very good. ok

I2: Just for the record. So you're saying that before you like to finish your act and you have questions prepared?

S1: In my last act yeah I tried this to really make it. I wanted to do an act that I could do. It was not just one shot. It was like I want to improve and do it many times. So to improve it I was like "ok I have to make it better everytime." To make, not better, but in evolution. I wanted really to have references to. Not only to have a vague idea of how this time it happened and the next time it happened. So after, before doing that, I was writing down ok what was the place, the people looking at me, what were the different factors the different facts. And afterwards I was writing down my feelings. Just after. My first impressions. And after i was writing the different feedbacks and a conclusion of with a distance. (laughter but not from S1)..Because after an act you have you are "ok it's good or not I was not really satisfied." And then with a distance I'm going to think something else. Like more nuanced more precise. I2: You say this morning specifically you were not satisfied?

S1: yeah...for me to be here gives me those tools. It's very boring to do on myself. Like "ok". It's often, not often, but sometimes I didn't do it because I just forget it and it was (indicates something disappearing in a puff of smoke). But being like this and speak to people and have questions I didn't think about makes me realise things.

(Talk about structure of next session for several minutes).

I2: The next session we're going to be a little more clear on what we want them (the teachers) with you. It's going to be through him all the time. It's always going to be him telling you what he wants but sometimes it's going to come from us.

S1: Often I guess when T1 gives me lots of advice and I know "ok it's for the research". I1: Not necessarily the correct interpretation.

I2:Often we ask him something and he interprets it you know so. But what's important for us to monitor. To record how you feel about it. With those changes. If you feel it's a positive change or a negative change we need to know that. It's the research. So that's going to be often the interviews. It's going to be "ok the last two weeks we have this change. How do you feel about it?" It's going to be like that.

S1; Sometimes, not often, and I think it's good for me when I have a distance. But often when I work I often feel like I it's too much. It's often too much I feel like a lot of advices T1 gives me is related to the research process and sometimes I am just like "this time I would like to breathe myself and to be in my things a little bit." So I don't know. It's not a lot. It's not a lot now but I just wanted to say.

I2:You can tell us.

S1:But I often I feel. No sometimes feel that the research makes something more on my class and I would like it to feel like more free. Because I think everything I do is going to be for T1 an opportunity like I feel like sometimes T1 feels like he has to give me feedback and blah blah. Sometimes i just want to do my things.

I2:It's not natural sometimes. If I say that? It doesn't respect your rhythm.

S1:It's not that. .. The research going on makes too much questions maybe , too much thinking for him and me.

I2: yeah we understand.

S1; I need to be in this thing to be in myself and then to have the distance you know. But just sometime it's not. So far it's not very big, it's very nice and maybe with a distance I will find it's nice to do that.

I1:You need to communicate that to us.

I2: It's very good you say and I think at some point you're not comfortable I think you need to tell us "ok I need to stop for a class or two." Because that's part of your, you have the right to say "I need a break."

S1: yeah I know I remember.

I2:But I just would like to say we want to put ingredients in the soup, to use your image, we want to put ingredients and see what happens. So it's sometime's taking T1 and you outside the comfort zone.

S1: yeah

I2:And we do that on purpose.

S1: I know it.

I2: If it does not work we need to know.

S1: This is ok ...I know how to do...comfort zone. I know this is good because with this sense I will be realising that it will make me understand things...

I2:And T1 also is going outside his comfort zone if I can say that so because we're observing you both.

S1: It's just that..I don't want..this thing I am getting. (French spoken) I want it to be a bonus on my work. If I think it takes the place. It's nice thing for me to get and to understand with a distance but (if) it prevents me from doing my for me the most important work I am here to do. But I prefer do a little bit less (research) with the other two (classes) but a lot of (indicates balancing his work against the research) with the research. It's just a measure of where I have to...

I2:You tell us ...we count on you to tell us. Ok thank you.

Appendix 1.3 DBS 1.03

Feb 13th 2012 Case Study 1, Interviewer: I2, Interviewer: I1, Student 1: S1, Teacher 1: T1

I2: We're interested in talking about the sessions in which there was a work of improvisation where T1 was working on...

I1: On the Thursdays

I2: From your point of view can you describe what was happening? Describe what was happening. Describe what the exercise was.

S1: (long pause) umm

12: Or just describe what happens. When T1la comes in the room what does he tell you? S1: Ok we just went into this room to do the warm up which we couldn't do earlier (in the other studios) ...we went into this room so to be in a calm atmosphere and then he just wanted us..... to focus on the object, what it can bring. So we tried to focus on different parts of our body as if it was the object to better understand the relationship with the object and what the object brings and what it takes out. So we did improvisations and...

I2: So the first one was with no object?

S1: It was two weeks ago so I can really remember that. .. Was it? (to I1)

I1: The first one I didn't see, the second one I saw.

S1: Yes it was without an object I think. This one was without an object. Maybe it was.....I'm sure. Every time there was just 5 different (pieces of) music for 2 minutes so we go 10 minutes. And we change ambiences and the music helps to improvise. ...Yes in the first of these improvisations it was without the rule of (the different) parts of our body.

I1: I think the week before, T1 was telling me, was a bit different (to what I saw). That you were using ...I don't know.

I2: Well, talk about last week, this week.

I1:Yeah the one I saw.

I2: If you prefer....so he changed different music with different ambiences..

S1:..and he wanted us to focus on one part of (our) body every time the music changed to see what (is) the difference when we start from the hand (or) when we start from here (stomach). Or if we take an extremity or something with our torso. Also he wanted us to every time the music changes, on the last improv I think, he wanted us to also think about the colour, different colours with different parts of the body. And we went, at the end, from here (stomach) to all the articulations (gestures to shoulder, elbow, wrist,

hand) and in the end the thing that begins the movement is the object.

I1: So you started from the stomach that was the first one.

S1: Stomach, shoulder, elbow, wrist, object.

I2:What is, do you think, the objective of this exercise? What is it that T1 is trying to, I'm going to use the word "teach" you? But it's ...

S1: To put more consciousness on things we do not really think about. Because we are used to moving or to do things with the object but to really disassociate the (something?) of the body and to incorporate the object to better understand what we can do with that. I think it's like that.

I2: And do you feel it worked? Do you feel you could feel the interventions? S1: For me I was not really happy or very enthusiastic with these exercises because ...we talked after a lot with T1 and that was why I wanted to talk to him about something. But for that I was just not feeling very ...I was seeing really. I kind of figured out well why T1 wants me to do that and how he wants to work with that. It's just that to me it was notI felt like it was little bit....I didn't find it appropriate in the training I'm doing here...

. It's the kind of movement (that needs) really big researches, you could spend a life on and just to do this... For me it was too much to be spend[ing] two hours on Thursday to that and it was frustrating because it's not with two hours a week that we can really (get) something.

I2: So it was too small to get somewhere?

S1:It was interesting but just first in my work, the work I want to do here with T1, it was not a good measure of that. I'm interested in that in the absolute. But really here what I want to do is to increase my skills in what we choose to work on. And also I felt a lot that T1 wastrying to see where we go at the same time as us...I didn't feel very efficient or very ...to be like mean I would say that. I would prefer (it) if he had skills in dance (or as a) dance teacher or impro movement teacher. After I talked with T1 that often I wish he could better come in(to) my place. To see what it I need now for me to be on stage and my diabolo formation. And everything because I know he's very interested in lots of things that's why he wants to research everything but often it's too much.... thinking too much research and there is a moment when I need really to work and to do my things yet really..... We talked after that because this was just an extra sign of what was going from Christmas more or less at the beginning of the session. I really feel now I need to be more autonomous. It's not really in the realm of which coach teaches that. I need now to... I feel kind of often too much feedback. Too many things I do not have the time to work (on) and to take what he tells me and to put it in my work. If I'm working on something he's already going to tell me the step after and always to do lots of things. And I do not have the time to ...take it and to work on it. As I have no time to .. juggle alone.. it's hard. But I really the same problem in all the schools I did before.

I2: So you would like to have..to spend more time alone working?

S1: Yes that's what we talked about.

I2: When you told T11a that how did he react?

S1: When I told him?

I2: You told him that and what was his reaction?

S1: I explained to himhe took the time to think about (it). It was on Friday last week I think. Not last Friday the one before. So he took the time to think about (it) and thenI do not remember...yeah.

I2: You don't remember his reaction?

S1: I know we talked (about) lots of things but it was kind of not really directed and more blah blah and at the end just for me it was still clear it was just a problem of measure. And I understand it's hard for him that's why hesitating to tell him because I know it's not a lot a problem with the coach it's more that I need to be more autonomous now. Also I didn't know which part the research project was (present) in the fact that he always gives me lots of new things so I didn't want to express myself badly so I took the time to really think about what was going on.

I2:Just to explain a little bit. It is true that we are influencing what T1 is doing. Just to be on the same page. We are asking him "what do you want to work on as a teacher? What is it you feel S1 needs to work on?" And then we ask him "ok so what kind of exercise would you like to do to achieve that?" So we are not telling him to do that specifically but we're encouraging him to be more precise about what he wants to work with you and to plan some exercise to work on that. So that's just to explain a little bit where the research is in this thing. ...Do you feel your objective and T1's objective are meeting? Do you feel they're contradictory or?

S1: No no I think we are on the same thing. And we talked about, so sure, we agree from the beginning. It's really more the measure. It's just too fast for me. Really too fast.

He has lots of ideas and I'm doing one exercise or I'm just working on my own thinking about three things at the same time. And then he has me (work on) another thing that breaks what I'm working on and always I never (have) the time to really build something so it's very frustrating and I notice that often I feel very, when he's looking at me, and I'm always working on something I am thinking about something. Sometimes I'm "oh I just hope he's not going to tell me something right now because I want to finish my thing." Before to integrate a new tool he's going to give me. So often it's just a problem of measuring the feedback he gives me.

I2: so it's not so much the feedback but the...

S1: In the schedule also for the formation I often feel like he has lots of pressure to.. He has objectives for me like to do that and to really have control of those sequences and to do lots of different things because I have different areas of work.

So he wants me toto work hard on this one and as I'm not already controlling this one he already wants to do something else and something else and something else. It's just sometimes what... I feel is just that I need that he realises more the time it takes to (do) that as a juggler. And especially for more I am someone who really needs to over control something. To go to do something else. And T1 is someone who...he just begins to do something and he has new ideas so he just wants to go forward forward and he's just very theoretical. On paper we really agree but when we work I need to more to go step by step and to do it well not to make a big soup that I can easily do. And he's already like...I feel like I already work on not going too fast so for this thing it doesn't help me. It's extra work for me to have to make T1 understand that something I would like really do that before. But I realise there's lots of pressure. In a way it also helps me to ...like to achieve something in a day. It's just a problem of measure.

I2: When you mean "measure" you mean in English we would say "pace". Pace is how much ..like you said how much information at the same time. Just to give a little more room between each new information so you can work on things. You can control it like you say.

I1: Given that, this Thursday I think he's going to do another one ...

S1: Yes so what we also ended up with was that we keep doing that on Thursday but we do it like with less talking and with more doing and we like [do] two improvs. To make it like 20 mins and then we go back. We go back downstairs and we can work on the other things.

I1: Two improvs with just one bit of music? How's that going to be structured?

S1: I don't know he didn't tell me.

I1: Oh he didn't tell you. Two minutes again?

S1: I guess that it's going to be kind of the same.

11: But not three sections and not so much talkingSo did you sort of negotiate with him about restructuring the improvisation sessions a little bit? Did you suggest those things?

S1: When you were there I think maybe it was on the video. He asked us how we felt about that and I told him I was not really enthusiastic even I didn't tell him as clearly as I did afterward. And ...he thought about that and he came with a proposition that would make me less frustrated. And I still think that it would be a good thing for me to do this work. I am interested in doing in that but really it's better for me to do just warm up with that and to do something else after. Because I was getting frustrated because I do not really see any....I do not feel like I'm going really somewhere when I improv for two hours and after I just have not (enough time to) work on my (other) things. So that's it. So we kind of. Yeah maybe negotiate is a word. I don't know. I1: Collaborate?

S1: That's what I feel like that's what we do with T1 and more often what comes out is good because it works for both our selves.

I2: Tell us what is your plan for the next...until the end of the session now? S1:Now I want to have my research area with my sticks 2 pairs of sticks and my 4 diabolo. And as I cannot really do ...what I would like to do would be 1 pair of sticks, 2 pairs of sticks and 2 pairs of sticks with 1 diabolo. So what I do I work on my own for the two first (things) and for the sticks alone I do that on my own or as a warm when I have class with T1. And in class with T1 I just my two pairs of sticks with one diabolo and I split the two hours, one hour 2 pairs of sticks 1 diabolo and the other hour for (something indistinct).

I2: And at the end are you going to havelet's call it a number...or something to present?

S1: yeah sure. So far I just work on. I have ideas for this presentation now and the only thing with that. My two pairs of sticks with one diabolo this is really a big trial for me on stage because even if I can. Now I feel that I really increase my skills and I have much more control than two weeks before doing that. It's still going to be a very...like a trial on stage. I don't know if they're going to shake or.it's something very precise so I do not know how the stage can make it hard. So this is a trial and to do that I just focus especially on one sequence, like a choreographed sequence like 1 minute and a half. I want to rehearse and do this. That's the only thing I already know I'm going to put in the act. And the rest is other ideas about breathing about maybe singing and maybe playing accordian. I've been playing with that but really I have no other objective than trying my sequence on stage. Maybe 4 diabolos but I'm not sure at all.

I2: So you are not sure you are going to put..?

S1: But in (the) absolute this act as an act I would not do 4 diabolos but as it's supposed to show what we did with T1 and blah blah maybe I will do that.

I1:So the final decision to put 4 diabolos in for example rests with you? S1: What?

I1: You will make that decision whether you put the 4 diabolos in?

S1: I wish I will. Maybe T1 will want to negotiate that. Because that's what we did last time. At the end I put the 4 diabolos and it fell. I don't know if it's going to be better in April but I don't know.

I1: Is it just the...?

S1: For me it would be just to run like 16 catches.

I1: And then back to what you want to do?

S1: If I do it on stage I will not just do that. I will have an idea or put something in a nice way.

I1: Right so if you do put the 4 diabolos in you are going to extend that sequence or what?

S1: No not extend the sequence but I will not just do 4 diabolo like in my previous act. I just did it to make contrast in the thing with this kind of energy and something. It will not [be] like next sequence 4 diabolo and then I go back in my act. No no. That's why I hesitate to integrate it or not. But if I put 4 diabolos it will be 16 catches and whooah (gestures "that's it"). I cannot do much on stage.

I2: What is the difficulty with 4 diabolos if you describe it? I don't juggle. What is it that you need to work on?

S1: ah...when I grew up in my street and I (gestures juggling) all the technical high scoring diabolo skills I worked on. I did that when I was between 12 and 15 and I really increased my skills very fast. And of course I was thinking but not with so many questions as we now are thinking about. I just feel like. Like my 4 diabolo the two or three years that I work on (that).

I2: Two or three years?

S1: This is two years I'm working on [that] and I just feel like to make it truly work I would need to spend just my life doing that. When I was young I was doing that like non stop all the time and it worked. Now I feel like I just need to more more more more and this is time I cannot really take as I am in this school. With one hour a day I am trying to see if it goes better but generally I'm kind of frustrated with that because when I was young I was like....Improving crazy just by doing it by thinking by myself and just doing doing it without an external point of view.

And now I am in a professional circus school for one year at in ESAC and here one year and I feel like I am as good as I was when I was 15 when I was just working alone in my street with the wind and everything. Of course all the tools the teacher give me make me think in another way and increase a few things. But truly compared to how I was increasing my skills before I just don't understand if it's just the next step, 4 diabolos, which is really harder than the rest. But I do not feel that.

I2: So you feel what the teachers are teaching you are not helping you getting better? Is that what you're saying?

S1: No it helps me. Just I need more time. And I need...maybe it's the measure maybe it's just that. Too many tools and pieces of advice I cannot digest. ...It's just that. So it's a lot of things I keep in my mind and after when I will have a lot of time I will work on it and with these things in mind. But so far all those tools are not more efficient as if I would have like one quarter of all those tools. I don't know if I'm clear or.....Especially ...juggling is a really specific thing you have to spend so much time on it.

I2: So time is really the solution for a lot of things?

S1: No still we have to take a measure but (something indistinct) yeah...more time. It's not time for time you know but compared to the other things yeah more time. And time on your own and because the limits are different. The limits in other things ... you need a teacher because you need to [learn] about safety about the limits of the body. You cannot do rope for 3 or 4 hours.

In juggling the limits are different and if you really want to make something solid on stage you have to go more. ...I do not really feel like ajuggler here. Like...yeah.

I2: You do not feel like a juggler?

S1: Yes but juggler doesn't mean anything. Just I mean that I am not like in my bubble and practicing all the time and thinking about getting crazy with new tricks all the time. I cannot do that here, I have too much other things to think about. Other things for my body to do and not the time.

I2: And is that a good thing or bad?

S1: As I chose and I knew it it's a good thing because I came here knowing why I was coming here. It was not especially because of the diabolo classes. I know I had some space and some time to work on diabolo so I was ok with [that]. I really did not come here...I didn't know T1 yet but truly I was kind of sure the formation was richest for the jugglers in ESAC with all those crazy teachers who come.

Really I came here more for the flexibility and (indistinct) to see the crazy school it is, the culture, and how it will be here on stage different than in France. So no I am not disappointed. Just that I realise now that I need to be more autonomous.

I2: When you say "autonomous" you mean "alone"? Or do you mean autonomous. Autonomous

S1:To work by myself

I2: Without someone watching giving you feedback.

S1: It is always better to have someone giving you feedback and an external point of view but there is a measure and right here the measure is too much for me. I feel like being more autonomous now. That's it. ...And also it makes me wonder sometimes because the research is here....to make me more autonomous. And now I just feel like it's too much and I need to be more autonomous....

I1: It's ironic...a paradox.

S1: But I'm still really happy to this research and to have those....so it's about (gestures give and take). And I also I think for T1 it's hard because first he's not an artist, he's not a diabolist, he's not a student and ...like the other students here are not really like me. Like [another student in the class] has really different needs and different point of view and really works in another way.

I2: This exercise can work with him but not necessarily with you? Is that what you are saying?

S1: Yes we do not have the same needs. I am not in this school because I was in need of a diabolo coach

I1: What was the question that you wanted to ask?

I2: No I can't remember. But you have a class at 1.30? Do you have something else (to I1)?

I1: I just appreciate how honest you are in these interviews. It's great.

S1: I'm not what you're looking for... (laughter).

I1: No no it's good.

S1: I can still talk with T1 as clearly as honestly as we already did.

I1: No it's good it gives us lots to think about.

I2; Yes thank you.

Appendix 1.4 DBS 1.04

April 13th 2012 Case Study 1, Interviewer: I2, Observer: I1, Student 1: S1, Teacher 1: T1

12: So this is the end of this cycle. The end of the research essentially. We may do another interview like in June like during the shows. We'll see if we feel we need to do that. So essentially now it's time for a wrap up - un bilan. So the first question is like how do you compare now as a student as a learner I would say as someone who's learning I mean right now? How do you compare who you are now with who you were at the beginning of the year?

S1: Specially in diabolo?

I2: yah in diabolono not just specifically. Well we can start with diabolo but you can also open up to different situations if you want.
S1:..I would say my juggling went forward in my work. Nothing changed strongly I think in the way I learnt. It's always like lots of research. I was level about what I wanted to do and what I discovered on the way. I kind of matched both and this is where I am now. I logically found new things I met other things more slowly in diabolo. Others I forgot because I did not have the time so lots of things I did not really....I put on the side and I would have to find another. I [am] also still on the way of discovering on stage and I realise things about my work being on stage and the way I move ... and I keep getting clues.

I2: Can you give me an example of when you say I'm learning how to be on stage. Can you give me an example of something that is new for you that you've learned this? S1: I had two presentations ... I have no opinion on (?). It's not big things it's just I am having experiences. So I experienced a way of creating an act. And afterward I can have a distance and think about it. Something I cannot do when I am in [it]. I don't know (?). Like here now where I am preparing another one and I notice that with an external with T1's view we speak about lots of things. And sometimes one thing comes up.

Something I noticed more because it goes together with something I already heard about by someone else. So it makes sense. Like he told me to be careful because I am very closed on stage. More often the way I move. I think it's related to the confidence you have to get on stage. And so it just make sense and this time I noticed it. And now I realise more I can work on it. Things like that.

I2: So when T1la tells you you're closed on stage or you look down. How did he said that?

S1: He said that I was closed and I am in my trip I am in my thing and it's not inviting for the people. It's not open to the audience.

I2: And you are making a link with something else you've heard.

S1: I heard that at the beginning of the year here by (?) and another student Emille he told me I could be more open to help so I make the link between things and I realise things and that's it.

I2: When you say that you worked on two different approaches. You said you're working on two different numbers and I think you said there's two different ways of creating. Is that what I understand...maybe I did not understand well.

S1: Yeah yeah I did two acts which was two more experiences that were different... they were not so different.

I2:If we look at the differences let's say between the two ways .

S1: The first one was just a very big desire (?) to have sticks on stage and to really have this *contrainte*?

I2: Constraint.

S1: Constraint ...to see what I could do with that so I mostly start with what I could do technically with my diabolo the tricks I found and then I try to meld them with some ideas of things I have to make this thing on stage. And this time I wanted more to ...for this act I had lots of ideas but I didn't keep up to find them. And finally I just wanted to go in the process that I want to have more of long term which is to really have lots of....all the tricks I know in diabolo that become some tools...I want the movement to lead the thing and I want to be at ease enough with my diabolos to make the (?) come to the movement. I just want the movement to decide where I am in the rhythm. I want to be always ...if I write something too much if I say "Ok I did this sequence like that with this music blah blah blah because of that the story is that the meaning is that in this orientation blah blah blah." I am going to be a prisoner of that. And the other thing is to do too much improv ...so I just wanted it to be good. To have enough things written that I can bounce when I am in difficulty but truely what I want because of what I want

to do on stage is to reallythat the movement leads the thing...that's the real meaning I want.

I just want how I feel to be in the presentation so I can bounce with that.

I2:So you have one tendency which is to write which is to write everything and another tendency that is improvising. And now you are trying to do the two together.

S1: Yah I find my way in that. What I am going to do here is the first like real time I spent to try to build that. So i was really struggling at the beginning to do only in my head not to write anything but then I really need to write something.

But I discovered that I was already reading too much ah rushing too much and now I am in between... ..kind of good except that as this a school with rules I think I would still do in improv or I did half an hour make something longer or try lots of things. I will not try them here because I have to go in certain rules.

I2: What are the rules?

S1: It's like I have to ...like T1 wants me to do some technique. It should not be so long...blah blah blah. He's "there is a big thing...try it in the middle it can be long la la la" ...things like that just to respond to what the school wants me to show.

I2: And those you see as rules? Like they are things you need toa frame you need to work inside?

S1: Yes I think there is a measure for me to find in between the frame. There is a certain frame and I have to find the measure between what I really want to do and how my ideal [can] be satisfied with what I do in this frame. That's it. And so what I wanted to say is that this thing I am doing now is more or less what I see myself at more long term on stage. Really that's what I want to improvise to have a circle to have live music and to be on stage moving sharing that be always bouncing... and I really love the state of improvisation when it'swhen I give myself enough tools to go with something to bounce on. To be at ease you know.

I2: What do you mean by tools?

S1: Ok this sequence this ok that manipulation I am going to do, a certain thing at a certain moment. Just enough to have something to rely on.

I2:Ok so something like set and you can always fall back on that and then you improvise also.

S1:I would say that generally I want more ...I want to improvise more than people who are at school or the people who are in the world of circus I think on stage. So I still try to find my way...if I [was] just to [go] "ok now I am improvising I have nothing in my mind. " ...it's going to be very hard so I am just finding....

I2:As a learner going back to learning what would be your strengths and weaknesses you think? What makes you a good learner and what makes not so good as a learner? S1:

I2: Let's start with the strengths...what makes you a good learner? S1:

I2: Let me ask that differently. What is your style of learning let's say? How do you learn?

S1: How do I learn? ...I think I already know what I want and then I try to go in that direction and... I try to take ...point of view and blah blah blah and look at people ... I2: When you say you look at people ...as models ? When you look at people what does that mean?

S1: Yah I mean I know ... I see other diabolists. These I think were more from the previous [time] when I was learning all the diabolo tricks I know like when I was really five years I was mostly looking at people and after I have seen other things ...I

discovered what I wanted to do so now I kind of know what i want to do. Really these qualities are strange....

I2: Because let me just put it in a different way maybe to help you answer that. So you're in a school situation. I guess with school it can teach you many things. And we each have different styles you know we each...If I give you an example some like to just repeat, experiment, some need to have only the feedback from the teacher, some want to just learn by themselves through the experimentation. Those are just a couple of examples of learning styles. Some need to understand everything, some need to have everything planned, some need to just be open to what happens....

S1: I feel like I can be in all different situations, in different classes. I know that in diabolo and here with T1 I know what I want and I know how long is the path I really wanted it ... to ..yah I mostly when I came here I didn't know T1 at all ...so to me I had space and time to do my work so I wanted to do it. Anyway I wanted to take the benefit of having someone look at me doing these things. But sure this thing is more I do my things and then I check or the external point of view makes me realise along some certain things I did not realise a lot. And in other situations maybe for some specific things in acro I would ask the teacher because I do not know why what I do doesn't work and I can not do this trick in acrobatics. So I would want people to give me feedback. And in other situations I would like to be alone really and to really spend time and be with my diabolo and see how I go naturally just with myself. ...As a quality maybe I have one I think I am very focused on one thing and sometimes I do not listen to what I'm told ...[that's] something I have.

I2:Can you give me an example of a situtation where you were focussed... S1; With T1?

I2:T1 or anybody else...you were so focused on what you were doing that you were not listening to what was told?

S1:um......I have no ...really...

I2: Can you think of one teacher where that happens more than another?

S1: I thinkmostly I think with T1. He's the one I spend more time with and we often talk about. And we often have different point of views. And so ...sometimes...I remember one where I ...I am even negative before he...before he tells me something I am already going to be thinking "ah what he's going to tell me is not right"...this happens.

I2: So you think that's a bad quality?

S1: yeah. But if I am able to say it now it's that I realise that. When I realise ok no I am really going to listen to him and after I am going to see how I react and after formulate something. And I do not know because yeah more often the result at the end is the same like I still have... my point of view didn't change a lot with his and then if something is repeated with the time with someone else he agrees I'm going to give more credit to that.

Because what happens often is that ...I think there's a problem with that. He told me something "ok I observed that." And I think I observed the same but to me the cause is from somewhere else. It's often he's going to....I feel like he doesn't see where it's from. So I do not feel like he's going to be able to tell me why. He's going to like work on the consequences when I'm already trying to work on the cause and he doesn't help with the solution because really the solution is how to work that (indicates cause). You know.

Like for this act..like I don't know...I'm trying to do something hard. Like to really let the motion be the leading the thing. And of course it's not going to...it's hard when I start with new music and he's just like "ok improvise". Of course what I'm going to do

is not going to feel great because it's not a presentation and it's the beginning of the work and of course you improvise (indistinct) ...so he's going to [say] " ah this time it was very long here. You should do that or you should take out this". When I know it was notit was not like I would ...I do not like it either. Just I want to try. I would need to work on it. I would like to work on it to make it the way I want not to take it out or to do something else because of the presentations there is stress I have to do something beautiful...sometimes that.

I2: You had a big plan at the beginning of the year ...you had things written down ..you showed us you know. Where are you with this plan now?

S1: It was more I think a working method to divide my work. Ah...Everything happened...Because of course all I have in my [plan]....everything is not like perfectly done. But I really hope I did well in my researches. I know better and better what I want to do. And those experiences on stage ...preparations and processes for me to know myself better. And diabolo particularly ..I'm really happy with the different researches I did. I feel like each of my researches like 2 pairs of sticks, or just tricks with sticks or just with diabolo. I could really find lots of new ones and tothe thing is that I do not have control of them enough so far. So I feel like I have now still lots of things to work on just to...I feel like I found lots of things now I have to make them safe. I2:Is there anything in your plan that changed?

S1: I really thought I would do 4 diabolos easier and I already thought that when I arrived in Brussels last year and still it doesn't work. That's the most (indistinct) thing. I2:But it's still part of the plan?

S1: Oh yeah sure....maybe I don't know ...what time is it?

I2: Yeah I was also wondering... it's a quarter after...et quart. ...Do you think you work differently with T11a than with your other teachers?

S1: yeah sure.

I2:And can you describe what the difference is?

S1: That I am a specialist and I already know lots of things. I already have a big ...baggage...lots of skills already and I know where I am, I really know where I am. T1 is ...T1 doesn't tell me how it works.

I2: You mean the technical...

S1: Yeah both the technical and how we do the program we work together. Like he sees what I want where I am and then he makes sometimes a proposal blah blah blah and we negotiate a lot ...negotiate a lot with T1. And then he already...he doesn't know how it works really diabolistically. So he just gives me other point of views and how he has notions in movement. Lots of things I do not have and he gives me some tools on the side I did not have. But in other disciplines the teacher knows how it works and then I follow what they say trying to understand the best to do my own understanding of the thing.

Because after the school there are no more teachers. And in other disciplines also...it depends on which discipline. I know in handstand how I want to work. I know how I want to use this work. I know in handstand why I do handstand and how I want to use what I learn in handstand and acrobatics I know what I want to take from those classes. Anyway.

I2: And does that...because you were saying sometimes you're so focused that you don't listen to...do you do that in those classes like if the teacher asks you to do something that is not in the direction...you know where you want to go with handstands let's say. And the teacher makes you do something that's not going there do you...how do you react to that?

S1: I have to do it with them. Depends on the teacher...handstands sometimes...mostly in acro I think. Because in acro I know whenever I work like...I am in first year so I have to work on basics to do like dynamic gymnastics things and I know I'm not interested in doing that on the floor in my work. What I want to be is smooth and things I can do on the hard floor like I now here I want to work on waves or on waves to go to handstands and I want to do two tricks. It's wheel without hands and back whip that's the few things I want to know. Then I know that in first year we work a lot on something else so as I still have fun doing acrobatics I ok I do it. What I get mostly is the fun even though I will not choose them. And I try to have as much time as I can to know what I want ...what I know I want to work on. That's it and so yeah so I know what I want already so I try to ...it's always a measure I have to find. I have to be open enough to still get those things I may really not decide to get actually. And I am in ...anyway here I am in a process like I know coming here that this year is going to be that so I accept it ...accepted that already. I don't know if I'm doing a good job or not. I will know with a distance in a few years.

I2: yeah yeah of course.

S1: Maybe I'm too closed maybe I'm too open.

12; We'll see. Just before you leave. We have four minutes left. I want you to give us feedback on the research. Once again we ask that every interview but now it's the end of the research and we just want to know a bit how you feel about the experience? S1: Oh mostly positive because it helped me to have more reflections and to realise things while I am explaining like that. ...Sometimes ...it changes the classes. Because one thing we're going to talk a lot. And then it's going [to take] lots of time somehow. And the other one I know it changes the behaviour of T1 and then he'll try something when I would like some time just ...I know what I want to do so ...and then we do something else. But really it's normal it's part of the process and the measure is kind of pretty good. I would say a little bit still I would have to feel less sometimes the process the research project.

I2: You would prefer to feel less?

S1: Like I don't know. Like what we do at the seventh floor on Thursday morning... and it was something that was supposed to be ...to do quickly to be warmed up and after 10 mins to go down. And already we often we are like ...we start late...so this thing that takes 10 mins takes 20 or 25 and then we talk a lot and then it's hard ...It's just that it's supposed to be a warm up and when we arrive on the fourth to really start we are I am colder than when I was whan I started the movement class.

I2: ok I understand.

S1; But in general there is nothing bad enough to make me want to stop.

I2: very good...ok so you got to go. thank you very much.

I1: Thank you.

S1: so is that the last meeting.

I2: It's probably the last one but we'll see in June if we want to ...if we have more questions...it will be during the performance time. Maybe we'll fit an interview somewhere but we're not sure we have to decide if that's what we want to do.

S1: Will there be a conclusion or something ...I would like to know where the project went ...

I2:A report you mean?

S1: Yeah

I2: There will be a report...they'll be conferences probably here at the school also.

S1: It would be interesting. I know that I am not to supposed [to know] everything while I am in the process but if we conclude.

I2: Yeah yeah you would like to know what (indistinct) basically we learned from that. S1: How I helped and ...

I1: I'm sure that we'll discuss that with [Patrice Aubertin] and give you copies of the report if he's ok with that. I think it will be fine.

S1: So thank you very much...

Appendix 1.5 DBS 2.01

Nov 24th 2011 Case Study 2, Interviewer: I1, Student 2: S2, Teacher 2: T2 I1: What we are going to do is just back track over the last three classes because you had Monday you were sick (S2 nods in agreement)...so going back to last week I want to just talk about did you feel there was a little change in the way T2 was giving you feedback ... from say the previous week?

S2: Well ... I don't feel like there was a difference...

I1: Just check my recording I'm recording good ... I always do that the first question. I wait til my intro to go "oh I must check my recording"...it's just this little light on the front that told me anyway....so the question was yeah did you feel there was any change at all?

S2: I didn't feel like there was a change, there was most definitely the change in the skills I was doing but the class felt the same ...he was approaching me and responding to me in a normal way that he used to.

I1: ok...In what way were the skills changing?

S2: It was because of I was coming off of an injury ...ankle problem.

I1: The ankle.

S2: So he likes to... start on basic skills and getting me back on my feet so mostly that class I was doing a lot of things to my back cos he didn't want to like risk me landing on my ankle things like that.

I1: How did the ankle ...what was the ankle from?

S2: Well I have a sprained tendon or pulled a lingament or some sprained ligament or something in my left ankle and it hurts when I like...

I1: Is it like an old injury?

S2: Oh no this is like new I don't know where it came from at all it just started hurting one morning and I just recently got it checked and I've been doing physio for it so I don't like know what specifically it came from.

I1: So it's just some sort of sprained ankle there...

S2: It only hurts when I like flex it over its head (demonstrates with his hand)...

I1: oh ok right ...so ...did you feel.... like/ cos T2 uses a lot of questioning doesn't he I mean do you notice that?

S2: mmm (nods in agreement)

I1: yeah he uses a lot...and when I was in the testing period I noticed him using a lot of questioning... do you think that he's using the same amount of questioning now since I've been watching like last week?

S2: For me it feels like some of the questions ... are ... he's not asking as many questions as was first because he was trying to get to know me and what my level was in trampoline but at the same time I feel like he's asking new questions...

I1: new ones

S2: about because I'm doing new tricks but I feel like...he's like ...he don't ask the same questions because I feel like some of the skills I'm doing are cleaning themselves up ...so I feel like he don't have to like say anything that he would have said anything that he would have a couple of days or last class...I would do something he would just

give me a simple head-nod like "ok that was good... that was much better" things like that.

I1: Do you feel that when he does that what happens to/ like cos when he's coming in with really fast questioning like it's really fast ...I guess you're responding to what he's asking but if he does it like more non-verbally or doesn't ask so many questions what does that change the way you think about like what's happened?.... like obviously you do something and then review naturally but does it/..how does that change you know how you think about what you've just done? ...If he's not asking the questions so much? S2: Well if like I feel like when if he don't ask questions and he don't have anything to say after I do a trick that means that I actually executed that trick really good really well I1:ok

S2: ...so that sometimes is a lot better than saying "fix this" or "you did good ...clean that up"...a simple head nod so well I think that was a lot better things like that ...and so like I feel like if he don't say anything I feel likeI accomplished something... I1:ok

S2:at that particular moment.

11:I think you - bang- you've kind of hit something on the head there ...of the decision tools the way you're talking about that is Bandwidth so like when you're close to something ...he's not saying so much so you know that you were close to it...but what happens when you know you're close to it? What happens in your thought process? Like it's not just "oh well I know I got close to it." ...but what other things are going on? ...I am just interested you know in terms of in your head?

S2: Well ...in my head when I say I feel like I'm close to something most of the time I kind of ...like he'll give me head-nod but the second time I go I will try to change something or do something differently or try to make something better then I see what happens that second time and I'm pretty sure that second time he' s going to have to say something about it cos either I did it bad worse then before or I actually did a lot better than the first one so ...I always try to like do the same trick twice but try to tweak... I1: tweak yes...

S2: ...a small part in the second thing just to see what he was going to say see how he react to that...

I1: Ok so that's really interesting soyou know like first time you know you're close to the target cos he's not giving you the feedback and so you're/ you have a/ and you're not just changing something "oh I'll think I just change something to see if to get a reaction." ...you're obviously are changing something..

S2:..to make the trick better and things like that...

I1: Right ...that you think is going to improve it...That's interesting.

S2: and it can also work two ways cos ...he probably could not say something and give me like a simple head-nod it could mean two things it could mean that "ok ok that trick was ok" and then the second time you do same thing ...he's probably want/ I'm thinking/ here's what I'm thinking like in his head probably ...he's probably seeing if the first thing was bad I did he didn't say anything he wanted to give me another chance to try to find my correction or find my mistake in that first one and if it changes he will say "now that was" he would probably say "that was much better than the last one"...but ...because he always tells me this a lot he was like "do you know what did you do wrong in that flip ..that made it go bad?"...and so (something indistinct) sometimes he does it silently he like he don't say anything but he wait for me to repeat the same mistake and then I could probably can catch it a lot faster the second time because he ...because he pointed it out but he don't say nothing he's probably seeing if I can find out mistake I did and how the trick would work better...what the mistake I did the first one

...sometimes I feel like he's trying to/ he's going to like try to let me find out what went wrong for myself without him giving me any hints. I1:ok

11:...I think that's what I was observing too ...so that's really interesting....Did you feel that in terms ofsuccess that ...this process this you know holding back a little bit to force you to find "ok I'll try this to see if this works try this see if this works." Do you find that speeded up the learning or actually ...the reverse like slowed it down a bit...which?

S2: I really felt like it speeded it up the process.

I1: Really.

S2: Because back home ...I said this the first meeting ...I was always ..my old coach would be going over the basics basics basics basics...so repeating one trick for a long period of time wasn't bothering me and it made/ it had a really big effect in the long run on accomplishing bigger tricks and so right now I can repeat a trick at least 10 times but it doesn't feel like 10 times ...it feels like everytime that small trick that small thing's just like getting cleaned up to transfer transform into a bigger trick and things like that and so I feel like ...it's like to and he like...kind of don't say anything and I like repeat the tricks several times in my head I feel like "ok I need to change something." But I'm willing to keep doing this trick over and over I won't like skip steps cos that's how injury occur.

I1:Yeah yeah so you sort of like investigating ..

S2: uh huh

11: ...the situation. And so you feel that speeds it up. What about ...just in terms of like say in three attempts at something and he's using this more withdrawn

....process...pushing you to think...in three ...do you think you are successful more times than say ...previously where he would be sort of directing you more?

S2: I feel like I would be more successful in the three steps in those three times trying the trick and he's like being like more like breaking everything down I feel like that is a lot more effective and I also I learned step by step and I feel like it's easy if you break things down to chunks I mean bits and pieces.

I1: I guess the question /that's not quite the question I'm asking/ the question I'm asking is : when you're searching for the answers like say you've got one "ok now ok well I know I was close but I'll try this mmm ok now I'll try it now. I'll try it"... when you're searching for it how/you know and then he says "yes that was it." How much success do you have compared to say you do it and he goes he asks you a very directed question so you know exactly what he's talking about ...and you go "ok, well next attempt I'm going to look at the mat at that moment that he was telling me...then bang, number two, you do that, it was successful, but when you're searching around for it are you as, is it as quick the process in terms of success... in terms of success I guess is the question?...I'm asking.

S2: I think I get the question but I think I will say...

I1: It's not a trick question...(laughter) ...you can say it's slows it down but in the long term you know I prefer it because I'm gonna really learn these basics...I'm going to get the breakdown in my head more clearly so you know you can say exactly what you think now.

S2: Ah...ok...you say if I break it down...

I1: Like if it's you that's breaking it down..

S2: If it's me I'm breaking it down and doing things like this but he's like clear and direct with it like "you need to fix this"..

I1: yep yep

S2: ...or I'm going "I need to fix this part then this part"...

I1...or "maybe it's this ...I'll try this anyway."...that sort of thing.

S2: Well I feel like it's different..

I1: Different.

S2: ...and I feel likewell for me I feel like when I'm hearing things hearing something from a teacher I feel like that speeds the process up...

I1: yep

S2: ...because of ...I'm pretty sure the teachers knows what he's talking or she's talking about ...

I1: yep yep

S2: ...so like I can just go for it and do it but with me I feel like ...it's me I can do what I want I can take as long a time as I can or I know I feel like I'm like not answering the question you asked me...

I1: No you are actually ... you're answering the question because the first time you said "I think it speeds it up" and I think what you meant was "I think this is a better way of learning." ...but it might take longer is basically what you're saying? S2: uh ha

I1: And that's absolutely right because from the information we've read there's quite often is a slowing down because you are searching for it so you are ...and this is what I mean by there's no right there's no ...there's no trick questions here...it's really like what you're experiencing..

S2: huh mmm

I1: ...so that's right that's normal and that's why it's quite a big challenge for teachers to take this...

S2: uh huh

I1: ...role because they know the answers exactly...they can direct you there very quickly but this is ...you've identified is a different process...and you're breaking it down and you're finding...and because you know you haven't been...bouncing on a trampoline as long as ...

S2: yeah ...[2nd student in the class]

I1: or T2...well we'll get to [2nd student in the class] in a minute but T2 as well you know...

..it ...as the more you do it the more that your knowledge base increases and the more you places you to go for the answers so at the moment you know ...the ..because you've been used to horizontal travel on the powertrack...

S2: yeah

11:...now you've got to put everything into the vertical it's like totally different ...so that's really interesting...and I really appreciate you really thinking about the question because it really really helps us when it's not just "well I better say" (the "right" answer) it's because you know everyone logically everyone wants everything to be faster and better all the time... that's not necessarily the best way to learn.

S2: I don't think it is ...that's what led to injuries I think the first time with me because I was progressing so fast and Iwas just thinking of my tricks I wasn't like breaking everything down in my head but also it is really good to learn fast and progress fast but I don't feel like you just learn the tricks and things like that you're not learning those small technical details that...

....makes up that trick without thinking about what you need to do you just are executing a trick and it's just like second nature but then like you forget and one slip you can like hurt yourself ...but when you take the time and break the tricks down I feel like you can make one false move but you broke it down so much you know in this point where you are and what you need to do to prevent yourself from hurting (yourself) and this when you learn super fast it's hard to like break everything down to pieces because you just like taking on chunks and chunks at a time one flip then ok double flip then triple it's really hard to likecontrol that ...like we do like back tuck, then like back to clear back to open puck and things like that it's really easier to like ...be safe.

I1: yeah well it's interesting you say that because I mean the process of you constantly being able to break things down and ...be asking these questions de de de internally means that as you say at any part of the skill you know where you are and you can correct and be safe.

S2: yeah yes that's the most important I feel like is being safe ...I don't want to take on a big huge monster if I'm not prepared for it if I haven't ...and that's what's good about this class..like take it step by step ...like he realised I had an ankle injury so that class... ..I did all tricks to my back and stomach and things like that...

11: ...so that kind of leads us to also balancing that is I think T2 realises he's got a naturally talented athlete on his hands and so ...you both want to achieve the big tricks as well that's what you're here for...I think am I right?

S2: Yes for sure.

I1: yeah yeah so for instance a hard first trick that he's chucking in every now and then or putting in every now and again is the double layout and ...it's the one that we're all aware that the stress levels go up when I mention the word (laughter)...and so and that's normal I mean it's and that's what hard first is about it's like you're going out of the comfort zone into an area of stress ...what have you noticed about the way T2 introduces this skill?...How does he do it? You know is it every time ?..or ..I mean I don't see it every time in the you know when I'm observing but just tell me a little bit about how he's approaching that one.

S2: Well first like..i feel like he always does it this way ...like I'm doing my basic jumps and then he always asks me "oh your foot? is your foot ok for double backs?" .. i say "yes" so I do my first thing and he's like "oh that was good...you need me to call it?"...Things like that, he says "ok good we're going to do one more round of double backs." ... and double pucks, then double pikes, then double lay and I (something indistinct) I'm like "ahh double lay?"..and he'll be like "we do one today." And he always say "one today." And then like I get the first one out of the way he was like "was it good?" and I say "I feel good" and he says "let's do one more just to get used to feel and everything." .. and things like that ... and he always like slide in the double lay he's like double backs double pike double lay he'll like say the double lay really fast.. I1: ..like sneaking in the injection you know when you're getting a vaccination they tell you a joke and then boom...(laughter)...and why do you think he does it like that? S2: Because I don't think...I feel like he don't want me to worry too much about that one trick while I have other things to tackle first ... I have ... that's the third step...he don't want me to worry about the third step before I take care of the first two steps because worrying about the third step will prevent from doing the first two steps correctly so I feel like he always say it with like a hesitation ah a pause and things like that because he doesn't want me to worry ..he'll say it under his breath but like "double lay" he don't want to be like "think about the double lay" while I'm doing something else....

I1:yeah so do you think that he's just reading you seeing if you're in the right zone for it?...I mean like some days would be there be some days where he said "double lay" and you're going "no not today I just" ah you know ..are there/ do you feel there are some days where if he said that and you really didn't feel up for it? S2: Well I never had days like that. I1:At the school or before or generally?

S2: I never did trampoline (indistinct) .. I never get days like that period. I1: ok

S2: With anything..but like if I did I just did it even it was like dance or flex or something but ...I probably..or are you asking me what would I do?

11: Well I guess I'm saying does he always ...like some days he doesn't do it..does he do it everyday?

S2: Mostly every class I did it except for like the class when I was like just getting back into it ..

11:oh ok...so mostly he does do it. ...I guess the question is ...T2 is very skillful ok and he really is sensitive to people's stress levels ..I guess he wouldn't be even saying it if he didn't feel it was you know the right day for it.

S2:yeah

11:But say for some reason he misread the stress levels a bit ..it could be anything it could be you've had a really shitty day and you come in with that energy and you're not really there you know that's a kind of dangerous place to be in as well. Just say that you know you were in that situation and he said "double lay" I mean how would you react?..it's a kind of a hypothetical situation because...

S2: I would like just be honest I'd be like "hey the day's not going so well...I don't think I'm ready for a double lay" and things like that.

I1: right

S2: But I highly doubt we'll ever have a situation like that...it's possible but I just feel like...and like once T2 like tells me like ok do this next I'll be like "ok let's go for it" cos that's the kind of person I am and I feel like ...he like ...tells you to do a trick...like the double lay he always had me do the double lay like once or twice and I feel like I'm thinking for him cos like I feel like I'm on the right it's like true ...sometimes... I1:Like you're thinking for him?

S2: Yeah like I'm like saying things what I think he thinks

I1: ok

S2: ...in his head but I feel like it's like right it's accurate I feel like I understand like he had me do certain things and things like that because I also was a teacher and I feel like I and I would do the same thing for the younger students not like these big tricks or anything but I feel like he just have me do it it's like life skills also like you don't want one trick or one thing to be the ruler of you ...you want to rule this trick..you naturally.....have more power than a thing or like a skill..you can overcome anything and I feel like if I don't do it for a number of days a number of classes I feel like that trick is like above me and like I'm trying to reach the trick I'm trying to like grab the trick and like do it but like if I do it I'm like everyday I do it I'm conquering something I'm beating I'm like throwing the fear getting the fear out of my body and out of my hair and so like the last two classes it was hesitant at first but the first time I did it I did it. It wasn't I did it the second time ...no hesitation did it again and actually did one more I think and the trick is not that scarey anymore. It went from like level 10 of fear to like level 5.

I1: ok

S2: ..and that's probably what he's doing ..it actually told me that too he said "you want just do it a couple of times each class just to get it out of your system and you'll be fine." ... "you'll be doing double lays you know double backs like back tucks" ..and things like that ..

11: That's really interesting..I'm going to just talk a little bit before we get to (indistinct) ...there's also a bit of change of environment ok ...in terms now [2nd student in the class] is also in the class, [3rd student in the class]? where's [3rd student in the class]? S2: [3rd student in the class] is here.

I1: He's around. Yeah ok.

S2: He doesn't have us on Wednesday he has it in Monday.

I1: Just on Monday ok

S2: ...so there's four on Monday.

I1: Four ok so with the introduction of [2nd student in the class] into the mix...would he be a higher skill than [3rd student in the class] on the trampoline?

S2: yes

11: yeah ok so it changes things a little bit in the class...so do you want to talk a little bit about just the change of environment there and how it works.

S2: Well for me it feels like a challenge it's like a challenge for me because right now it was just like cos [4th student in the class] wants to have his papers ([4th student in the class] was waiting for his correct immigration papers) so it was like me [3rd student in the class] it was like [3rd student in the class] (shows one hand high) and me (the other hand a little lower) and but I didn't see like a tremendous difference between the people in the class] and [2nd student in the class] (shows three different heights with his hand) so I always work better when I have something to reach for and like [2nd student in the class] is like...is like pretty high up there so it like I feel like it helps me when I have better people and more advanced people in the class cos like it pushes me to shoot for something ...so I don't like being the best at in my class cos it's hard to shoot for something when you're at the top already..

I1: right right

S2: So it like kind of...I enjoy having him in the class because I can see like ..I get like two chances to see what I need to do.

I1:yes

S2: Like I can break it down like I can listen to T2 tell [3rd student in the class] what to do if we do same trick he tell [2nd student in the class] what to do and hopefully I go on the trampoline and don't make the same two mistakes so hopefully when I go on the trampoline I don't do any of those mistakes and do it to perfection...things like that. I1: So it's a in terms of decision training that's a classic modeling like cycling through you know even like on Monday it's in two stages but with Wednesdays it's you know...and with ..how does T2 use the...cos i'm not sure [2nd student in the class]'s not aware he's modeling for you...

S2: Yeah he don't know for sure..and I stay he's my room mate too...he don't know at all for sure.

11:How does T2 use that? How does he work the modeling into? Like if you're having a problem with a skill will he get [2nd student in the class] to do that to give you another view point? or how does that work?

S2: I think he would...I can't think of any times he actually did that but I also saw when we was like doing the same ...I saw this with [3rd student in the class] when we were doing the same trick and I had troubles with it and he was like "now watch [3rd student in the class] at this point" but he would whisper that to me without [3rd student in the class] hearing but he was like "watch him at this point" and then like I could see what it's supposed to look like and what I'm supposed to be doing at that time and that also that helps a lot just to see and also when he tells/ it helps when the coach tells you to look at someone else when they do and things like that.

I1: yeah that's really kind of very clear...

the final thing I just want to get onto ...cos I keep coming back to the different tools that are being used and T2 uses a lot of them that's why it's a lot to get in....video feedback ok just talk a little bit about /you've got you know /we were using external video feedback a fair bit and now we've got this other aspect the point of view video feedback so just tell me you know what's it like looking at external video and then looking at this new video footage where you're really ..in the trick really I suppose? S2:well

I1:I haven't slowed it down

DBS 2.01b

S2: well when I'm getting recorded like this (shows being recorded externally) it's like it gives me like a visual like a full picture ...it gives me the whole image and and like it's kind of like it's like taking it step by step or like breaking the things down and like that little camera is like breaking it down (indicates Go Pro cam) and I feel like that (indicates external cam) is like moving fast ...ok I'm not explaining this but I'm thinking about it in my head...but when I look at to like this...

I1:external

S2:...external camera I can see the whole picture I can see the big picture ... i can see what I'm doing and what I am supposed to be doing ... I can see what am I doing..and I can see what I'm doing but when I use that little internal?

I1: We'll just call this point of view like it's called the Go Pro it's a Go Pro.

S2: ...that camera ...it actually looks like it gets into the trick ...it sees what I'm supposed to be doing .. it looks at the little technical aspects of every trick and things like that...because it was really cool yesterday like it helped me ...that helped me try to keep my head forward and the twist and things like that yesterday...It also tells me that when I'm throwing head back or sometimes you can see it on the camera (external camera) [00:01:25.803] ...and it's not noticeable because it's so fast but you can clearly see the camera (internal) shoot straight back in the flip where you don't supposed to do it and so that's pretty cool and like for split second you can see what you did wrong. ... and it's like even though it's going fast you can see it and it's like I saw like kind of slow ..cos it was like a fast ... shoo (indicates fast movement) but when you see like you do it right you can see for a spit second you did the right thing then you went under... I1:yeah [00:01:55.803]...I will try and get it slo mo by the next session ..I'm not sure we should use it every session because it could be like you know but where there's particularly a head issue it could be useful as a modeling tool you know so you and also slapping on someone else who's got the right movement as well ...cos that seems to be /keeps coming up the head positionwith T2 as a common kind of point and everyone's got you know their thing that they do ...so I think ...we'll leave it there...I'm

really really pleased with the way it's going and the way you're identifying things that we're looking for which is really really cool for us ...we really appreciate it so thanks for that and ...see you next week.

Appendix 1.6 DBS 2.02

Dec 8th 2011 Case Study 2, Interviewer: I2, Interviewer: I1, Student 2: S2, Teacher 2: T2

I2: Let's just talk about the evaluation. Of course we observed you on the trampolines classes. That's not what we saw but I was just wondering because I think there's a link between acrobatics and trampoline. ...First of all for your presentation the two presentations do you feel you were ready? Well prepared?

S2: Well I for a long time now for at least almost a month I feel like I was well prepared because I started so early on both the numbers. When it got closer and closer to this day I was in both classes and both numbers were going pretty rough. And so like I was at home I was like thinking "ok let me rest and get my mind straight and like throw everything out of my head that didn't have anything to do with the performances." And so ...and it actually went pretty good both. So I felt like I was really well prepared. I guess it was just that part where when it gets close you have those days when you're going to screw up.

But I have to take my time (like) the teacher told me. Take one trick. Trick by trick. Yeah it helped so.

I2: During the performance?

S2: Well yesterday I ran my number and it went so bad that I couldn't finish it because it was so bad and I was so angry. But [the teacher] talked to me and said "just take your time." He said he felt like I was putting too much focus on the big tricks and the little tricks were messing up. And when I was messing the little tricks up I was getting angry and so the big tricks were going to go wrong. He said just put 200% in each element and you'll be fine and that's exactly what I did today. I took it step by step trick by trick and it was pretty good. He told me that yesterday and before I did my number today there was a little prep talk and actually that really helped.

I2:Ok and did you use that strategy also for the acrobatics?

S2:Yes. I have the same teacher for diabolo and ...acro.

I2: The number we're talking about. Which one is it?

S2: It's Chinese hoops.

I2: That's the one that was going so rough yesterday?

S2: And I have the same teacher for hoops and diabolo. So [the teacher] told me the same thing in diabolo.

I2: So ok. So you used the same strategy of one thing at a time. How do you evaluate the result in relationship for what you expected? Like the expected experience versus the anticipated experience? Talking both acrobatic and the performing experience? What did you anticipate in relationship with what happened?

S2:Well ...I have a lot of experience with performing by the way. ...I felt like I did. I didn't do the best that I can do but I did pretty well and I just felt like it was really cool it went really good. So I didn't feel like any feeling. I felt relieved that the number went so well after the practices.

I2:After the practices?

S2:After the practices that went so bad.

I2:Ok ...

S2:Because it was a little sign of nervousness.

I2:Ok was it...there was a question I had when you were answering...lost it. ..um ...Any surprises in what happened today?

S2: Well it was a big surprise before I started my diabolo number. I saw Nathalie just like doing this (gestures Nathalie getting the audience excited) like "give it up for Sidney" and things like that. Like I'm a very visual person so like I'm doing my number but I'm also concentrating on my surroundings and so I can see the looks on the people on the other students' faces. And I also saw Daniela she looked like she loved it. I glanced to her for one moment.

I1: So you're checking out the key people.

I2: So that's after? You check out the reaction afterwards?

S2: No I was like doing it like during the number.

I2:During?

S2: Yes

I2: You were spotting. Did you do that on purpose? Was that planned? Or it just happened?

S2:It wasn't planned but Nico said I should take my time. So I if would just look like still in character but look at the people. But it's like giving me a breath. I'm relaxing at the time. I don't want to just like take my focus off.. So I like try to look and breathe. Everybody can see what I'm actually going through and things like that.

I2: That was your game plan? To do that?

S2: Yes. To look at people and that was like also my breathing point breathing moments.

I2:So how do measure the success? The degree of success of those? Let's talk about the acrobatics just because it's more related to the trampoline. The measure of success of this presentation?

S2: If I had to give it a percentage I would say it went 89.9 percent. I think it went really well. I messed two tricks. One trick I messed up it was a simple trick. But I messed up cos I felt myself rushing. Rushing that trick and I laughed. I laughed in my head and I had a little bit of a smirk on my face like "oh my gosh first mess up ok let's try it again."

I1: So this is Chinois..?

S2:This is Chinois yes.

I2:After?

S2: No .. during the trick.

I2:During the trick?

[00:06:11.728] S2:I got a little smirk.

I2: You knew something was going on then?

S2: Because the hoops fell. I hit the hoops and they fell. And so I smirked so I'm like "I messed it up. I'm going to do it again."

But I'm like super happy I did that other than getting mad and showing it. So that was a big thing in the practices. Nico said "don't get mad. You can't mad." I was getting mad each practice. I was walking around blowing off some steam.

But I smiled I did the trick...and I guess when I (get) angry the first time it's just going to built up the second time and the third time so then everything's going to go bad. So I got happy and did the trick. And the second mess up was the four hoops. And I felt like I messed up I wasn't angry. I feel like you mess up on a big trick like that. The first time it's a big trick and the second time it's just that much more better and greater because the audience see you fell and then they see you achieve and so that's like greater than just nailing it the first time.

I2: As far as the show goes how do you measure success?... Like I'm not talking just acrobatics but the overall success of that presentation. What makes you feel that it was successful?

S2: ah...the reaction because I'm not performing for myself. Most of the time I am but I'm performing for the students and staff, Daniela and Nathalie and all them. And I saw the faces and the reactions and that's what I performed for. And that's what... gradually I am going to be performing for the audience and so that's how I measure the success. If the audience....but I saw people like standing up so I know I did pretty well. If I thought I did bad but they see it different I know that was a really good number because I measure it by the audience reactions and things like that.

I2:Even if you feel bad. If you feel they liked it. Then that's good for you.

S2: Like back home my coaches and my other teachers and things like that used to say that I'm a performer that feeds of the energy of the audience. They say that's a good

thing but also that can be a bad thing because sometime's you can just go too far. Then you'll say "I have no limits when I perform because the more energy the audience gives the more I step it up a notch."

I2: And the more energy the people get and give back and it starts..I have an image of a wheel that starts turning spinning andum...it's a great link to your former coaches. Let's talk about your...well go ahead Jon.

11:Ok ...well we were interested now that you've done. Well how many weeks is it now? Like 6 or 7 weeks here or...? How the experiences here compared to your training experience back in St Louis?

I2: Let's talk specifically the acrobatics. Your relationship with coaches during the acrobatic classes.

S2: Well my main coach back home was [former coach] but he stopped for a while so we got a new coach. And his name was [former coach] and he was a pretty good coach but I felt like I wasn't learning in that class any more. Because I was with my other team mates and there were like really below me in acrobatic level as far as that goes. And we were just working on basics and like I perfected the basics to perfection with [former coach] and so I felt bored in that class. And it was to a point where I was going to gyms and practicing my own big things and big tricks because I had no teacher to teach me those tricks because [former coach] was gone at the time.

But when I got here it's more hands on. It's like I went from this level (shows a level about a foot off the desk) to this level (shows double the height) ... because I had a teacher back home that taught me acrobatic skills to a level that he knew. He had a level where he can teach acrobatics. And right here. It wasn't that he wasn't a good teacher - he was a great teacher. But he only knew so much so I have to leave and go somewhere els...which is why I came here and the teachers know a lot more. So I'm like I'm going to learn a lot more because their knowledge for acrobatics is greater than the teacher back home. They're both good teachers they just teach different skills and different things. Like back home - basics and technique. Here big tricks and learning to perfect technique.

I2: You are talking specifically about T2?

S2: Well T2 he is really hands on and breaks everything down to the tee. He's like. He will say a big trick to me and I would think ok "full full" but he would break down it down to "cruze half half". It's just basically all halfs and that's like/ I think it's really cool and I learnt a lot more that way than just going for the big trick. And back home I didn't have that because they didn't teach how to break tricks down. They just taught me techniques and like "go for the trick."They didn't tell me the mechanics of the trick. If you break this trick down step by step there's actually a lot of parts involved in this trick that you have to do before you actually attempt a big trick like that. And T2 he...step by step he doesn't skip any steps. You do this to perfection. That's when you move on. Back home I would just attempt a trick and it would be bad or good then I would do and then I'd put it on the shelf and I have that trick. But I really didn't have to perfection. I would just do it and it wasn't clean or it was unsafe really. T2 makes sure that everything you do is safe. So safety's first. That's why he breaks everything down trick by trick step by step.

11:And is the anything in the way T2 teaches to the way your former coach teaches? S2: Well I'm going to talk about [former coach]. I felt like [former coach] and T2 were very similar in the way they were teaching because [former coach] could be hands on but he was also more talkative. Like T2 talks a lot and really gets that trick and that skill in your head so you really think about it. And so when you think about it that's when it clicks. And [former coach] and T2 they both was like. Like go for the basics. [former coach] was like basic technique. Go over it go over it and keep doing it until it's like good really good then we move on. And T2 is also the same way so it was very similar. I1:When you're talking about thinking and how the coach thinks and this comes in interview we had earlier. That you almost try and get into the coach's head. And so if you were to get into say T2's head and how he thinks. What would you say?

S2:(laughs) um...If I was to get in his head and like he asked me a question and I would answer it for me? Are you saying that?

11:No I'm just saying. How does he approach? Say you do something and he's going to give you some feedback?

S2: uh hmm

I1: ..But how does he think to get the feedback across to you?

I2:What's his strategy as a teacher?

S2: His strategy is I would do a trick...boom...say for instance it goes bad. He'll say "do it again" first, first he'll have you attempt that trick again, do it again. And then if he sees a similar mistake then he'll try to say, "what do you think happened on that time?" and then he'll try to have me guess what went wrong. And then sometimes I will guess it but if I don't guess it he'll give me little hints. He'll say "more heel drive or something like that." (gestures T2's gesture for more heel drive). But first he'll try to/ he makes me do the trick twice to see if I correct the mistake.

I2: If you correct it naturally?

S2:Yes.

I2: Without any feedback.....and then he starts asking you?

uh hmmm

I2:And do you feel you can answer those questions?

S2: Yes.

I2: You feel you have the knowledge?

S2: uh hmmm. Well when I first started this class I thought I had the knowledge to know. When he asked me a question a little thing to correct. And I didn't because back home I was learning big tricks and I wasn't learning small technique step by step. But now I feel like if he asked me anything I know what went wrong..."more heel drive...arms up before I take off....turn around set cruze..." and things like that. I know like the little things now. And the those are things that make the big picture clear and those are things I didn't learn back home. Like with other teachers. But [former coach] it was the same ...little things.

I2:I was going to say. I'm just going to rephrase what you said. It seems to me you are more conscious of what's happening while you do the trick than before. Does that ring true to you? Does that make sense? It seems, "I'm thinking more now..before I did a trick I had it ..." You make me feel like you did not quite know why it worked it or not and it seems to me like now what you're telling me is that you would know why. What's going on.

S2: That's exactly right. Because if you just throw a double twist. You just threw your body around no technique what so ever. You got it around but we don't know how you got it around. Maybe because I'm naturally athletic. That's probably why I got it around. But like now I know everything. I know the small steps. And so it's easier the next time I do that trick and also it's easy like you can do that trick. I'm never going to goof off and do it.

But you can goof off and do the trick because you know it so easy and you know small steps you need to do. Because you can think really good and do a big trick and you can not think as much and do a little trick. And every big trick is just several little tricks. And so that's what T2 taught me like little tricks. Like I can say like the "full in" the

"full out" I mean I did recently. I thought I would never be able to get that trick. I thought I would have to just go for it but he broke it down and like it's super simple. He asked me for. The first time he asked me to do that trick was to go to my back and then "tell me" when should I "kick up?" And it felt so easy I can talk while I'm doing the trick to him. So I did the first part. I cruised. I said "here's where I kick out." And I actually kicked out and did the trick that's how easy it was. Back then I couldn't just attempt that trick like that because I didn't have no sight of what I was seeing. I couldn't see anything.

I2:It was like a blur?

S2:Yes but now I can see everything and it's pretty cool.

12: Ok. That's good. It's very interesting. I've been thinking. Can you break down a trick? Give me an example of a big trick that is a build up of small tricks.

S2: Ah well "full full". That is the trick I'm working on right now. I just got "full out" and "full full." Ok I'm going to tell you the hard way. It's "full". It's two doubles. No it's one double and two twists. So there's two rotations and there's also two twists. It's one twist in each rotation. So first "full" then another "full" then you land. That's like a super complicated form of explaining that to me that way. But T2 just says it's a "half turn...arabian...brandy ...cruise...duck under....brandy." And....

I2: You land on your feet? (Laughter)

S2: I land on my feet. It seems more complicated but to an acrobat ...all those skills are like super simple. "Arabian" ...a three year old can do that. "Brandy" and a "cruise" and just the half turn you can see and duck under with the front flip and then another "brandy". It's like super simple and

I2: So how do you do it...that trick now?

S2:I don't do that trick now but I know it. And like i just have to clean some other things up before I can do that trick. I feel like I can do....I can do it on floor easily I feel like. But on trampoline ...ah...two more classes I think I'll have it.

I2:Why would trampoline with all the height why would that be harder than on the floor?

S2: Because I'm used to. Cos I never did trampoline. My speed? I'm used to going this way (indicates horizontally) acrobatic going back. And it's just scarey for me going this way now (indicates vertical). It's like a different feeling and I got to get used to it. And I have a lot of power and a lot springs in my legs. And then...it's just I get twice the height and I don't know how to control it yet. It's just something that will come over time.

11: When T2's using the technique you described. The questioning after you've done it a couple of times. And you say you feel like you know the answers. How equipped do you feel really about answering those questions? Because in some interviews you were saying it "I'll try this. "And sometimes you said, "I guess this and that." So is it always really crystal clear which question to go to or is it sometimes like "oh what the hell." S2: No. Sometimes I'm pretty sure on tape I'll be looking confused. I'll think I'll know it and I'll jump and stop and then "look ok wait ok." It's not clear all the time. Sometimes I have to still think about it because it's new to me. And I'm not like Einstein pick(ing) everything up really fast and things like that. So it's like learning with time.

11:So like how...what's your process? Like you have obviouI2y a memory bank of all these things you do well and then there's some stuff over here that you're just working on. What goes on in your head when you are working on, say ...something complicated that you're working on now, what ever it could be. When you come down where are you going in your head to find the answers?

S2:Well it's like if I had like two parts. I have (indistinct) like a full-out or something right here. I don't think about any other tricks but I pick those tricks that like I learned earlier like those little parts of the tricks. So pieces of that trick ..that's what I think about like "half turn" "brandy out" and things like that. I think about the little things that he had me do to work up to this big trick. And I try to put them in its order the way it goes to build up that trick.

I1: So when he says "what went wrong?" say you go to?

S2:I try to like scroll down like "ok I did a nice heel drive, I looked up before I get..., I went I half turned". Then I can see if I skipped a part when I went down. I can see that I didn't look at the mat ..that's the part I forgot to do. Things like that.

I1: So this sort of scrolling down. That seems quite organized. Do you do that outside of the class as well sometimes just like d-d-d. Or is it always when you get to the class? S2: I never think as hard as I do when I'm not in class. It's like really is a big challenge for me because I think a lot in class. But if I am just practicing with some friends jumping on the trampoline I'll do the trick. I will try to think of that trick really really hard before I do it. I would do it only if I'm confident about it. I won't throw a big trick that I learned just that day with some friends and not with a teacher present.

I1: So when T2's in the class you go into this ...?

S2: uh hmm..think mode.

I1: More think mode.

S2: Because that's like my teacher and like my friends it's more of play. I don't like to live by rules when you're playing with your friends.

I2: There's a difference ..training mode and a playing mode. ..

S2: It's not like I play like goofy silly play. It's play just to have fun. It's like safe play. I'm not going to get hurt. So that's why I won't try a big trick and like I really don't want to think that hard to throw a big trick for some thing's not/...like for some guys that's probably not that interested.

I2: I'm good.

I1: yeah I'm good too. We'll just talk about....oh well how's it been for you this session with you the added...?

I2:..with the research.

I1: yeah with the added research on your back? You know the camera and everything?

S2: I really did...I didn't feel like...it felt normal.

I2: you felt yourself.

S2: I didn't feel like pressure like "oh the cameras." I didn't feel. It felt really normal. It wasn't too big or nothing.

11: And I've talked to T2 about speeding up the process if we do use the head camera. I've got a hole drilled into the side now where we can go straight into your head into the computer (laughter) without taking it off and stuff like that. So hopefully that won't slow things up.

I2: So you are willing to continue with the research?

S2: For sure, yes....It's pretty cool because this is like happened like. The little program you all got...Decision Training? It's also helping me with skills to talk about it again. And like I can like think about what I say at this meeting and I can also can try to put that knowledge back into my thinking mode when I go to trampoline class. So I can think about the recent class. So that when I talk about it it also kind of helps me refresh my memory from the previous classes and I also think about what I need to work on and what I need to do. This helps to get it out.

I1:ok

I2:ok

(Brief forward about next session, dates etc)

I2: We're going to talk with T2. There may be more specific things we ask him to do. You may find some changes...we'll see. But it's important for us to monitor how those changes effect you positively or negatively or neutrally. It's important for us you tell us "this is not working" or other reactions that you may have.

[00:26:42.009] S2: ok ...cool.

I1:Ok ... and good job today.

Appendix 1.7 DBS 2.03

Feb 14th 2012 Case Study 2, Interviewer: I2, Interviewer: I1, Student 2: S2, Teacher 2: T2

I2: so this is the end of a cycle ...so I was just wondering to hear from you what is it you are working on these days with T2?

S2: Well right now we're moving I2owly to get to my full-full on the trampoline and we haven't attacked that specific trick yet because I'm still working on a few baby steps to get to that trick. I'm like still kind of injured and things like that so....

I2: right ...so I heard. ...So there's that specific objective and ..think more globally like what are the objectives you are trying to train now?

S2: well for like the trampoline class or just period?

I2: Trampoline class .. with T2.

S2: Well my goal...well I never did trampoline , obviouI2y you know that. And my biggest goal is to clean, get my technique really solid and get a few big tricks and just to have trampoline under my resume to offer to these circus companies so I can be more versatile and I can be like well rounded in every aspect of circus. If I have trampoline it can be a good addition to my contract when I offer myself to a show.

I2: There's the immediate goal and there's long term but let's say during this first part of the session...what were you working on? You said about getting clean.

S2: Yes I was working on technique I was basically getting the basics of this whole session because I never did trampoline. It was a challenge for me because I never did trampoline but I'm an acrobat and so I was doing big skills like people do on the trampoline I was doing those big skills on the floor. And I'm used to the tumbling floor and the regular floor so for me when I started trampoline I just jumped in right into the big tricks and so I have to spend a lot of time on the little techniques. I was learning the little techniques for big tricks. I didn't like spend a whole semester learning how to jump and like placement for feet. I really jumped into big tricks. But it was like progressively I2owly into those big tricks.

I2:Ok can you give me an example these small things. I forgot how you put it but small things that you need to do the big tricks?

S2: Yeah for the trick I want to get is full-full but I was working on the smaller techniques first. I was working twisting at the right time for the first twist. I was working on setting a lot, keeping my head forward. And I didn't know for every skill you do on the trampoline you always spot and look at the bed. I didn't know that at all. So I was practicing on a lot of tricks with me looking at the bed, keeping my head straight and forward, going to upside down then twisting like arabian to back. All those little things help me for that big skill.

I2:So all those they are they're still tricks?

S2:Yes they're tricks.

I2:But the goal of those tricks is for you to focus on the trampoline?

S2: yes. Those are like.....ahlike ah...sorry I don't know how to put this. Those tricks are, like you say they are tricks, but they're progressions to a bigger trick.

I2:T2 calls that an educatif. Is that ah?

S2: a what?

I2: Educatif ...

S2: Educative?

I2:yeah they're exercises to prepare you to do another exercise....um another example of small things?

S2: yes....ah....he also has me practice heel driving because I remember doing the first semester one of the first big tricks I started to tackle on the trampoline was a double lay and that was like the hardest thing for me. It was like the scariest thing. He'll say "double lay" and then...they'd be like a moment of silence and then we would look at each other...."ok let's go for it." Because he was having me practice my heel drive and I remember one specific class where I didn't drive my heels ...which is really bad under rotating. And so he took me off the trampoline. Told me "lay on the floor' he did that and then he had me kick a ball. One of the big beach balls. And then he told me kick ...I don't specifically remember how it went, but he told me to kick the ball and then he had me do something else, then he said "kick the ball." And I couldn't kick the ball. But he said "do you see the difference, if you heel drive it is automatically going to go over." It was something like that so ...he was trying toget me to use like my whole body from my finger tips to my toes and that helps a lot.

I1: So kicking the ball is the educatif for the heel drive.

S2: Heel drive.

I1: I have seen him do that with other people too.

I2: So did you feel the effect of that?

S2: I felt that it was a big difference. After he did that. Because I remember that was the trick that I also hurt myself on. After that I felt like a lot more confident on doing that trick and I just knew what was the problem and what was the cause of me not making the trick all the way through successfully. And so after that I just felt like a lot more confident. He would say "do the trick" and then it wouldn't be a hesitant ...ah pause. I was just "like ok let's just go for it."

I2: Can you recall the moment you did that trick that did not go well?

S2: ah yes first it was on double backs, then we did double pikes, and then he said "do double lay". I gave him that look. Double lay. The first double lay was like really arched and really bad. And then the second double lay was really arched and really bad and then we moved on to back tuck, cruise, duck under. And I did that and pucked and he said "do it tendu" do it straight. And so when I did it straight I just like completely forgot about the heel drive. I just like ...everything just went blank. I looked at the bed, I had too much rotation, I didn't duck my head and so I like put my arm down and just like whipped my arm and just popped something in my shoulder.

I2: When ... if you try to recall this moment . So you're on the trampoline. I want to put you in the moment. You're on the trampoline...

S2: It was a tough time.

I2: you're bouncingyou know you need to do that. So you're getting ready there...ok? You're bouncing. And what happens. You're bouncing and...?

S2:what happens now or?

I2:no no I want you to recall that moment.

S2: ok well...I wasn't even thinking about it . I was like "ah I can nail this trick." I just did the tuck under pucked. So I'm like "ok this is not going to be as hard as a double lay. So I did it tendu. And then the first thing I did wrong, I took my eyes off the bed. And

then when I did that I knew it was going to go wrong. So I took my eyes off the bed. And then at the same time another problem occurred ..there wasn't enough heel drive. So that made me turn too early. And once I turned to early...my flip speeded up so I got a lot more rotation. So now I was in this weird position where my.... upper body was done and my legs were over my upper body. And I didn't tuck under and I don't know why. So I just fell flat first, like the upper body part of my body first. And I tried to stop it with my hands and just push. It was just so crazy.

I2: When you say you did not know why. Just before that moment before you should have tucked you say?

S2: I should have tucked but I don't know why I didn't?

I2:But you did not. What happened just before that?

S2:Well I saw all the things going wrong. I saw the first thing going wrong when I didn't keep my head straight, I took it off the bed, I took it off my sight. Then I realised I didn't have enough heel drive. So I tried to fix it in the air by doing a tiny correction which that correction was incorrect.

I2:What was that correction?

S2: I turned right away. Like I took my head off, I threw my head back and so I didn't have focus forward and so I'm like "now I don't have that much heel drive." So I turned right away and once I turned [I thought] my body would just like shift its weight and then... I was looking down. I thought if I would have tucked over I would have just killed myself. I would have over rotated or under-rotated. So I'm like "let me just try to fall and just brace it with my hands." But I'm not thinking I'm on a trampoline I don't know why (laughter). It's going to give back so...I put my hands down and just (indicates his shoulder being wrenched back). It was so bad.

I2: So you thought if you tucked it would over rotate.

S2: yes...I thought I was going to over rotate. Because I had a lot of rotation when I turned early. I thought I was going to over rotate and land on my face. Because if you do a front tuck it's harder to control the landing if you don't know where you are because it's a blind landing. So you can easily land directly on your face. It was the half turn. I didn't tuck under because I could see everything. I was just scared to tuck under so I didn't do it. And my first reaction was to put my hands down. Because I never did trampoline I was always a floor tumbler and I [could] put my hands on the floor and I could save myself like that. So that was my first big fall in trampoline so I just did what I was used to and I put my hands down. It was panic.

I2:And now in retrospect tucking would have been the right thing to do to get the rotation..

S2: yes

I2: ...you were missing to land on your feet at least. ...very good.

(laughter) ...no I'm interested... I am saying very good in the sense that I am very satisfied with the level of consciousness I guess that you have while you are doing that. I1:I have a question. So when you were actually in the bed before the trick.

S2: Before the trick?

11: yeah you are in the bed ... that's where you didn't get the heel drive right? S2: um hmm

11: What were you thinking at that moment when you were actually in the bed? S2:like in the air?

I1: ...no in the bed before you jump into the air.

S2: Well I didn't get the heel drive until I did the flip. I did the flip and there wasn't heel drive but I realised that after I threw my head straight back. I'm like " I feel my head

straight back." Normally I can fix that because I have enough rotation but I didn't have enough rotation.

I1:What I want you to do is to wheel it back to the moment that you are actually in the bed, right?

S2:When I'm jumping?

I1: Just before you're jumping.

I2: You're actually landing.

S2:ah landing the flip?

I2:no before

I1:before

I2:So you bounce right and then you land and that's your last land before you are actually going to do the thing. You're on the bed. The bed gives in and what happens then.

I1:Can you take us to that bit. Because we've been in the air with correcting the things that happened but...

S2:Well I knew I didn't have heel drive once I left the bed because once I left, my feet left the bed, my head went directly back. So I was trying to create the rotation from my upper body and not with my feet. So that's when I didn't have the heel drive when I just threw my head directly back. That was the first thing I realised.

I1:So when you are in the bed ...what were you thinking? What were you actually thinking the moment you were in the bed?

S2: I didn't think anything until I went into the air.

I1: Alright, ok, ok.

S2: Because like most of my tricks I usually throw my head and I can fix it but I still have some type of heel drive. I didn't have any heel drive. I just threw my head back and I'm "Ok" and once I get like a quarter [of a rotation] in the air I'm like "oh this is bad."

I2: Let's try to see if we cannot recall what happened just then because I think it's crucial. Let's do a game ok it's just for fun. So you're in the space right?

S2: um hmm

I2: You recall the space. You recall the people around you ...your facing.....you are facing?

S2: forward

I2: Forward to the windows.

S2: Yes the windows.

I2: You're bouncing getting ready for the trick. And you were saying, just before, "this is easy."

S2: yeah

I2: Ok that's when you're bouncing you're thinking this going to be easy I just did ...what you did before.

S2; yes

I2: So you're bouncing ..ok I want you to put yourself in that....you're bouncing. You feel the trampoline and then (S2 follows with the feeling in his body) ok this is you're last jump and you're landing and you're getting ready to...

S2: ...throw my head back! (laughter) ok sorry...(laughter) ok do you want me to like say everything?

I2: yeah now I want you to pick up my narrative. So you're bouncing, you're bouncing and I really want you to....be more there than you are here with us.

S2: ok bouncing I'm bouncing, my last jump, I take off from the bed and directly I throw my head backwards.

I2: But that's when you take off. I want you to go a second earlier when you are actually landing.

S2: oh I'm still thinking this is a piece of cake (laughter).

I1: So in the bed?

S2: In the bed I'm totally fine. It's just when I leave the bed that's when everything goes wrong. Like I'm jumping, I'm jumping, I'm jumping I'm thinking "I have this trick, I have this trick, It's a piece of cake." And I think that was the problem. I wasn't thinking about the trick I was thinking more "I have it."And I think that was the problem. ...I didn't respect the trick that's what. (laughter)

11: So now when you do that same trick. What are you thinking on that last jump. S2:I'm thinking about setting, straight body before. I try to not to throw my head back anymore. I think about like step by step. And right now I think I do that trick really really well now. I don't think about tuck, cruise, duck under. I think about setting, heel drive, half turn, cruise, front tuck. (demonstrates all the steps with his body at the same time).

Like I can see everything. It's like 1, 2, 3, 4 (demonstrates with his hand). It's 4 steps for me and I have 4 spots where I look.

I2: And you do those 4 steps?

S2: Yes I look at the (readjusts his chair to orientate himself spatially) window, then I do my flip, and I cruise and I look at the walls. And that's another thing that's wrong but I will tell you I just got that corrected. I see the bed and everything, Right there it's a piece of cake I just tuck under and open my body. And just my class it was last week. T2 told me that I should not look at the walls because of that video (Go Pro POV) that we compared with me and [2nd student in class]. We saw [2nd student in class] looking at the bed. I'm like "when is he looking at the bed?" So I'm supposed to tuck and I'm supposed to (shows his head tucked in looking down) here and cruise [looking] at the bed and that made it a lot easier but it was kind of weird.

I2: Cruise looking at the bed ?

S2: Yes cruise looking at the bed and not out towards the wall. That was my problem . And I didn't know , I just thought it was good.

I2: And how do you know that now?

S2: Because of the video. Me and [2nd student in class] did the same trick. And the beginning was really good. My head went back I2ightly before his. We saw him looking at the bed, we saw him cruise looking at the bed, tuck under looking at the bed. And for me you saw the beginning, the windows, you saw me looking at like a lot of crazy acrobatics on the floor and then the bed and then I flipped and then the bed again. And then T2 asked me why, and I said "I don't know... my cruise is fine." And he said "well you cruise and you're looking not on the bed. You should look at the bed when you cruise so put your head down and cruise over shoulder." And so then ...it made a lot more sense then I actually did it and it felt like a lot better. It felt better and it felt easier but it was weird just to like change it because I was used to something else but it's a lot more safer.

I2: I have to go ...I am so sorry. This is really interesting...I want Jon to continue if you have the time and I really would like to you to get Sidney's impression of Dong Dong or...

I1:oh yes Ding Ding

I2:I would be curious to know what you see when you see him. Because I think you mentioned something like he was perfect. So I would like you to describe what it is you see that makes you say it's perfect. Thank you very much. S2:Thank you.

I1: So let's go to that then. When you watched Ding Ding on the video what did you see? You say it was perfect. Why is it perfect?

S2: Well for one. Any one looking at something like that, and even if they didn't know anything about trampoline or acrobatics at all they would say that was perfect. So i said that was perfect because of the tricks he did. They were really really big hard high level skills and it was really clean and he was really controlled in the....

11: with the word clean let's take that word. What does clean mean to you in terms of the way he does it?

S2: Well I have two different meanings I was going to explain. One he was clean, like lines , and every flip you can see that flip, you can see that position. He held that position in that flip perfectly. He kicked out at the right time and you can see his focus was always on the bed. You could see him rise for a flip , you could see him up, he'll turn in the right spot and also he didn't drift like I do back and forward towards the edge. He stayed in the square. It was just. When I was looking at him I was looking at all the things that T2 told me that I do wrong and I was trying to see if he would do any of those things. He didn't travel. Every time he did any twisting it was up twist and see in the bed. He didn't twist off the bed. He would kick out perfectly, kick out and cruise down right in the center of the bed. His arms are up once he hit the bed. I just couldn't see. I don't know a lot about high level skills and cleanliness in trampoline but I do know about the mistakes because I make a lot. And I didn't find any mistakes that Ding Ding made.

I1:So when you talk about line with him what are you talking about in terms of? S2:His lines, his body alignment and everything was like perfect.

The legs were straight, toes were pointed. Everything's in line with the whole leg and his arms are straight to the finger tip. Like he'd go for a pike and you just see this position (demonstrates a pike position) and then kick out. He's like actually putting those pants just like I2iding up his body and things like that.

11: So when you're looking at that and you're say maybe comparing it to what you see at the school. What do you think, what are your thoughts? S2: ah

I1:Between that and seeing your models at the school.

S2: Well for me ...[2nd student in class] I think he's like one of the best guys I've seen in person. He is really good but I feel like you can tell. For sure it was a competition that guy was in. But you can tell that he takes everything seriouI2y and he's like a lot more focussed than the behaviour that [2nd student in class] shows in class and things like that. You can see that. This is his life. He wants to do it. Even though I'm not hearing him talk or he's talking to anyone. You can tell it by his body, his language on that trampoline. Like he wants to do it. He's showing. He's speaking with his body. Like he knows.

11: Just speak a bit more to "speaking with his body". What are you getting from his body in terms of all these things?

S2:I mean he's nailing everything. He's doing every trick. He's doing every.... every little technique that I'm learning to get progressively to get to the big tricks. Everything like speaks for itself it's like perfect.

11: Right. So speaking with his body. I mean just talk a little bit about that idea. S2:Well....

I1:Because there's one thing doing the techniques boom boom. You know? What's this idea of speaking with the body?

S2: Well it's kind of hard. Like if you watched it I think. Well. When I was watching it, everything was just crisp and perfect and really good. I was just like "oh my gosh". It

was sending a message likeyou didn't have to call the tricks out because you could see every trick separately even if it was a double or a triple. It was like you could see every...you could see like the pike first. Like pikehalf turn...like you see everything. It's like really hard to explain. It's kind of weird the way I'm kind of saying it but ...you could see every step in every trick he was doing. He was so high and so controlled. Nothing was rushed. You didn't miss anything if you turned your head or something because he took his time with everything.

I1:so how come he had so much time?

S2: Well he had a lot of height and also he was doing every small technique. Like T2 tells me if you wait that second longer your twist will be fine ... I feel like he waited at the perfect time and then did the twist and then he didn't have to worry rotation because if you wait ...at the right time the twist will take care of itself and the rotation will too. So you can see the twist, you can see him cruising down. So it was like he'd go up in the air do his trick and then it's like a straight jump down. Like just a straight jump. That was how clean it was , how controlled and easy it was.

I1:So when you're on the trampoline now....that video, has that affected you in any way while you are on the trampoline?

S2: No

I1:No

S2: It's for me it's different because it's easier said than done and ...I like trampoline but at the same time I'm scared of it just because of the injury. That was like one of my first major injuries. Like I never had to go and get an x ray for anything except for the ankle that was a long time ago. But I don't feel comfortable jumping that high and then just.... doing big tricks on that trampoline. I want to learn them but I just don't feel comfortable and that's another thing that I feel like he had. He's not scared. For sure he respects the tricks but at the same time he knows that the trick doesn't own him he owns the trick. So he was like the master of his ability to think like that. He would do everything and know it in his head that "ok I got this trick I can do it." He didn't let the trick control him and take him over ...and that's what for me for trampoline I feel like I'm scared of the trampoline itself so. I feel like when I am trying to attack a big trick there's going to be some doubt in my head and some doubt in my heart like " I don't know about this trick."

11: So if you were to take say three things. You're looking at that video and then you're thinking about yourself in terms of differences. I'm interested to know three major things. So you mentioned?

S2: Say confidence ... the time. I believe he put a lot of time into it.

I1: Right so a lot of practice?

S2: Yes a lot of practice. And ... those were like the main two I think...I really can't think of three. ...If I had put the time in and I wasn't scared of that trampoline I think I can be as good as him. Because you don't have to necessarily be a good acrobat because you could learn the skills. You just have to not be scared you have to devote your time to doing it.

11:So let's just talk about the practice, the time. Because you mentioned the difference between [2nd student in class] and him. What type of practice are we talking about? S2: Well for sure I feel like. I'm speaking for Ding Dong or Ding Ding I don't know him but it seems like he trains a lot and you can definitely tell that he's a trampolinist. With [2nd student in class] he does trampoline but his first love is juggling so he's not going to put as many hours in trampoline as he does in juggling. I feel like you always want to be good at your speciality, you going to have things around it to make you that much more viable and so [2nd student in class] he's been doing trampolining a long time and he's really good at it but I feel like he would be lot better and a lot more focused if that was hismain thing that he loved. Because I see [2nd student in class] juggling. I am his roommate so. He has juggling equipment at his house. He juggles in his room. I saw him at a juggling competition he just loves to juggle. He loves to be the centre of attention in juggling. For sure he likes to do trampolining too but at the same time I just don't see that spark and that love that he has for juggling in trampoline. And I feel like the way Ding Ding expressed himself on that trampoline I feel like that's what he loved to do. You don't have to talk to someone or ask them any questions about "do you love this."

You can see it in their work. And his work definitely showed that he loved it, he is happy with what he's doing and he wants to be the best. He showed that.

I1: So just to finish off. So you've identified the confidence and just basically the amount of time that is a difference. ... Do you think T2 is, with the way he's teaching you. What strategies is T2 using that might be connected with those things? Do you think T2 knows about those two issues? Not issues, just two observations I guess. S2:I think so. I feel like T2 teaches us...he gives us the right tools and the right skills we need and as much time. If it was his choice I feel like he would want to have more hours on trampoline. But he doesn't push us to the extreme he knows our limits and he knows we have an hour a day after a long day so he's not really demanding and if you make a mistake he's not like all over your butt. He's really chilled and really relaxed. He lets you decide I mean not decide. He lets you ...take another look at your own mistakes and see what happened and what went wrong or what went right and things like that. So he's more like a really cool and relaxed teacher and not more like "you have to be good, you have to train hard." He's not one of those teachers that it forces like so much and wants so much from you because he knows that this just another something else for you. Like I'm pretty sure ...like I'm pretty sure he's a lot harder on planche guys because trampoline is like really really crucial to their speciality so I feel like those classes and our classes are totally different.

I1:So you basically chose to do tampoline as an extra thing.

S2:No I didn't choose to do it, it was just on my schedule.

11: Oh it was just on your schedule. Ok so that just appeared on your schedule. Alright well I think. Is there anything else you want to take about in terms of what you think T2's strategy will be after the break? Where do you think he'll go for the last part of the session?

S2:Well I think he'll for the last part of the session. I think he will mainly just have us practice on a few skills that we want to learn and that we have been learning and try to perfect those tricks. That's what I think I don't know.

I1:So you're going to talk with him about what ones you're interested in?

S2: or the ones we've been working on.

I1:oh the ones you've been working on.

S2:To try to perfect those skills for next year. You can have those skills , just cleaning up the small basics and things likes that.

I1:Do you have any ideas of some tricks you'd like to do that you've seen?

S2: yes I want to do full-full straight. [3rd student in class] he did that trick.

I want to do a Miller.

I1: What's a Miller.

S2: It's a full, double full - two flips three twists. I want to do that on floor too.

I1: ok so there's a connection what you want to do on the trampoline and what you want to do on the floor. Do you think as you do more trampoline that you might....? Well

what is it, do you get a trick on the floor and then it comes on the trampoline or the other way round?

S2:Well all my tricks I got on the floor first but then it was hard for me to put them on the trampoline, But I really do feel like the trampoline classes are helping with a lot of stuff. Like I want to full-full on the tumbling floor and it's a lot easier than what I made it out to be. Like I know what to do now. I have dreams about it. I can see the trick now...

I1:right ...on the floor?

S2:On the floor yeah. Because I can see everything. I think the good thing from trampoline, it helps my floor tumbling a lot just like spots and awareness. I'm like really really aware on the floor now so. But there's also some bad habits that I picked up too like kicking out at the top on the trampoline. I was doing it on the floor and it wasn't working it was pretty bad.

I1:So you have to sort of say what techniques work on the floor what techniques work on the trampoline.

S2:Like big tricks full-full and Millers. Trampoline totally helps me a lot on the floor. I1: Alright well thank you once again.

[00:35:50.000]

Appendix 1.8 DBS 3.01

Nov 22nd 2011 Case Study 3, Interviewer: I1, Student 3: S3, Teacher 3: T3 I1: We're just going to review the last week ok?...and you were sick on Wednesday so we had the first class and then we've had one class this week so it's quite good ok to compare.

S3: ok

I1: So just...first of all yesterday's class ...how did you feel? What changed for you?S3: It's moving along like fast ...like faster than it was..I'm not stopping as much andI kind of know what I'm doing now with like combinations and stuff.

I1: yeah ...right ...and..that's because you're getting stronger and more endurance you think?

S3: ya more stronger...

I1: yeah ok

I1:In the interaction between, because that's what we're really interested in alright..

S3: mmm

I1: in the interaction between you and T3 ... how's that going?

S3: ...it's sometimes hard.

I1:..in what way?

S3: ...like the language barrier ... so I'm learning Russian a little bit like trying to get it back but and then I don't know or understand French that much ...so I try to...

I1: So do you understand more Russian than French?

S3:yeah

I1: oh ok

S3:yeah

I1:So what language is T3 using most with you?

S3: ah Russian.

I1:Russian?

S3: uh huh

I1: ... so there's kind of three languages being used.

S3: ya

I1: ... and do you find that a bit confusing?

S3: um not really cos like in French and Russian I know like body parts so when she tells me like to move a leg somewhere I would know which leg to move and..

I1: And you don't have a problem flipping back from one to the other..

S3: no

I1: What ...yesterday T3 changed a few things a bit...what did you feel about that? S3: um....I liked it because it like challenges me to remember what she changed and then maybe like next class I'll have to remember the changes like that...

I1: In particular she was using video a lot more

S3:uh mm

I1:How did you feel about that?

S3:Iiked it because then I can see...

...what she's actually talking about because visually/ and when I'm doing a movement i can't really see where my body is going and how it looks like so looking at a video is a lot easier to to correcting myself....

I1: And how do you think/ because we're kind of collaborating here..

S3: uh hmm

11..so how do you think you could take that further...I mean this is the first time she's done that now she's stopping every 10 minutes or so ...in terms of visualising what you're doing...

S3: uh mm

11:...how could you take that further? ...like what would be the next step for you with the video...

S3: um ...I think if I practiced during my like free time my free training and getting the muscle memory in then I can/ it'd be a lot easier then I know where each body part goes..

I1: And in... particularly in reference to the video what would you be doing with that like?

S3: ah

I1: ...like you using the video..

S3: If I learn a new trick...

I1: Like using the video during the class...

S3: ya

I1:..then you go and work on your own how would you connect the two things?...

S3: If I like forget something then I go back to the video..

I1: So you take a video to your private practice?

S3: ya ya

I1:So how will you organize that?

S3: Well I have either a video chip on my phone or a camera and look back see what I'm how it looks like cos I...

I1: So are you planning to bring something in next...and that was because of ?

S3: yeah because of yeah..

I1: Ok you got the idea.."oh ok."

S3: It's a lot easier to...

I1: ya so you have you're little private ...

S3: yeah

I1: ya....I want you to look at these two videos and just....

...tell me whatever comes into your mind...I mean we're not looking at the sound or anything we're just looking at how you are interacting with....

(they both look at the video of T3 and S3 in a face to face interaction from class) ...ok we'll put the sound yeah interesting(they look at the video)......we'll go to where you're just sort of not doing stuff.

 $S3: uh \ hmm$

11: here..she keeps you moving a lot so it's hard to find a time when you just...(they continue looking at the video).....ok now let's look at here ok?S3: ah huh

11: you can't hear any sound at the moment cos of on the...when the casing's on we have to drill a hole through the casing to get the microphone but just look at you(they look at footage of T3 and S3 looking at video feedback)....I just want to go to some footage of you both looking at the video together.....(they both watch footage for some time comparing the two bits of footage)

.....ok but you get the general...

S3: ok

11:So what would you say about yourself in this situation (indicates face to face footage) and this situation (indicates footage where they are both looking at the video feedback)? S3: In the first one (face to face) I think I was thinking a lot like cos it's hard to visualise what she wanted but then in that one (vf) when you look back at the video and you see what you did then it's easier to know what to do next.

I1: And what would you say about the difference in body language?

S3:I look confused in the first one.

I1: Interesting...and this one.

S3: In that one I understood what I need to do...

I1: ya

S3: ya

I1: So that's interesting isn't it?

S3: ya

I1:so what's going through your mind in the one where video feedback isn't being used?...what's going through your mind?

S3: um....

....I don't know..

I1: I mean if you're looking at yourself...like let's go back to it for a second (they look at the video of face to face interaction again) and can you recall maybe? ...I mean this is a situation that comes up a lot in class so you know what's going through your mind when she's speaking to youin this situation.

S3: yeah sometimes I don't either understand the movement like of what's she's trying to make me do ..ah like when she says "put your leg up" but then I don't know where it would go or..

I1: The pathway?

S3:Yeah the pathway to where it's going to go.

I1:So that's all going on in your head?

S3:ya like

I1: Like trying to sort of like work out...

S3:ya

I1: ok ..and here (T3 and S3 looking at video feeback)?

S3:...and then there cos I am familiar cos I've been working on it a lot ...now I'm familiar how the movement's supposed to look (like) but the video helps a lot ...

I1: ...Greatalso it's like um a third point isn't it?

S3: uh huh

11:Like if you think about it in terms of like we're talking here (indicates I1 and S3 talking face to face) but now we're talking (indicates I1 and S3 talking while looking at the video) you know to a third point and occasionally we're doing that (indicates looking away from the video and looking at S3 and then back to the video) so do in terms of ...do you feel a little bit/

. I mean she is an amazing coach she's one of you know

...she's married to the best trapeze coach in the world. How do you feel about her she's pretty formidable huh?

S3: ya

I1: Are you a little bit intimidated by her?

S3: A little bit yeah....like sometimes when if I don't get something she'll go on trapeze and show me how to do it. Ya I do feel a little bit intimidated. (laughs)

11: And umwith that feeling do you feel a little bit like um ...well tell me more about the intimidation feeling because we've all been there so you know..

S3: Ah we she is a great coach but sometimes I feel like I'm not going with her as far as I could a little ...

I1: ok

S3: But ...

I1: Like you're holding back?

S3:Ya like I'm holding back.

I1: Why would that be?

S3: I'm not sure..Going back to being creative kind of thing..I don't know ...I can't like open up enough for that so...

11:ok ...we're interested in pursuing these little things...so give me a specific example of what you're talking about so...

S3:um like doing improv sometimes like I ..it's hard for me to come up with movement I haven't been familiar with like doing with the dance trapeze..

I1: ya so when she had you low?

S3: uh huh I didn't know what to do.

I1: That kind of pushes her to then start directing you which is not really improvisation is it?

S3:right

I1: ya ...and what do you think in you at this point is holding you back a little bit in that situation?

S3:um like I need to get familiar with the apparatus and go back like doing stuff on my own and try to figure out different movement either around or going through it.

I1: So you come back knowing..

S3: knowing what..ya

I1: how the trapeze is going move and not being surprised..

S3: right

I1: ...is there a little bit of fear...

...in that ..."I'm going to get hit by this trapeze." ?

S3: ya sometimes

I1:a little bit ya...ok ...with ...this feeling of a little bit of intimidation ...is this the right word we're using?

S3: ya

I1:....give me a specific example of where that feeling of intimidation maybe ..holding you back a little bit.

S3: Probably cos from my old gymnastics coach ...she was also Russian and she would push me...

I1:She was also Russian?

S3: uh huh

I1: So ok you're used to Russians.

S3: ...she pushed me in a different hard way like T3 pushes me hard but like in a nicer way so...

I1:yes so tell me about this your previous coach.

S3: ah my previous coach would get mad if something isn't done right and then she'll keep pushing you until it's done right but...

....like T3 she pushes you and then you didn't get it she sees that you're trying ...so but she still pushes you in a nicer way.

I1: And so this is really interesting because you're bringing up two quite different ways of practicing...

S3: uh mmm

11: ...so your coach before she would keep pushing pushing until you get it then she goes onto the next thing...what's different about T3 in that respect?

S3: T3 sees you trying like sees you trying hard and then moves on if you don't get it and then tries another thing or tries the same trick but doing it in a different way so you get it in other ways.

11:So you are already identifying a decision training tool which is that (of) variable practice..

S3: yeah

I1: ...where you ..change/ and she does this a lot hey?

S3: uh hmm

11: ...you change the sequencing or you change the practice ..even if it's very similar ...you change it slightly after a point you don't keep pushing ..you push up to a point. S3: ya

11: ...so what's your/ in that situation where there's two different ways...you finally achieve the goal in the class with that with your previous coach cos it all happens in the class. What happens in this situation where you don't maybe quite get it but she (T3) changes it and...what happens there?

S3: um I think that way I feel like you can learn more ...like different ways to that one trick or taking like little steps in getting that trick so it's easier so you know if you did something wrong you can go back to each little step but like this one (indicates her previous coach's teaching strategy) you have to do the same thing over and over again. ...without those little baby steps on how to...

I1: ...like the break down.

S3: ya break down.

11: mm ok cool...which one of those two things...basically you're talking about direct training and variable training which is decision training ...which of those two is faster for you faster in getting something.

S3: I think this one (indicates variable training).

I1: Really?

S3: ya

I1: ok so for you the variable training actually you learn faster?

S3: uh hmm

I1: Why is that?

S3: um probably cos like the slower you go your muscles get used to it kind of like muscle memory but like this one if you do fast ...um...and you keep thinking on

completing the trick but not like going through it exactly how it's supposed to be done but um and ...like if you did the trick wrong that means you have to do it again and keep going and then you would worry about "I'm not going to get it this time." ..and then you have to do it again anyway.

11: So another thing you're bringing up which is really interesting is stress so the direct method you are constantly focusing on the end result (coughs) excuse me...and so when you start you are stressed about achieving that end result.

S3: ya uh hmm

I1: How does it work with the stress in the second in the variable training?

S3: um ...trying to like go by by every little step like stressing about the first little step and then the next little step and then trying to combine all those ...

I1: ok

S3: ...before you get to that...

I1: ...so the stress is less?

S3: is less yes.

I1:..because?

S3: You're not really worrying about it because you know all the little steps ...you just have to combine them to make the whole thing..

I1: I'm just checking on the red light ...ok this is really interesting...but you still (coughs) excuse me...you're still feeling a little bit intimidated?

S3: uh hmm

I1: What in your personality would you say is the first thing to sort of shut down a little bit when you're feeling intimidated?

S3: I don't ask questions like to ..

I1:Really?...you sure you weren't prompted for that answer...is that something you've been thinking?

S3: yeah well..

I1: Why?

S3: I kind of do it a lot I guess?

I1: Why?

S3 :..um...I'm too shy to ask questions?

I1: Shy? or intimidated?..which?

S3: Probably intimidated.

I1: Ok cos when you're hanging out with your friends?

S3: yeah no I'm not...

I1: Ok cos ah if you're hanging with S2 or someone like that socially ...

S3: No I'm fine...

I1: You're a chatterbox like everyone else.

S3: ya

I1: So ...I think that's good I mean I think/ there's no right or wrong with this ok? S3: mm

I1: All we are looking at is what happens and there's no pressure on doing anything alright?

S3: uh hmm

11: It's just being open with us and you know which you are which is great. ...So what do you think might be next step that T3 will do with this video feedback? S3: um

I1:You said it's going to work well for muscle memory ...you said that you're gonna take this idea into your own private training so you're going to bring in your own little

(camera)...which is interesting ah what do you think might will be the next step..what do you anticipate she might do?

S3: Um i think it'll be easier to look back on the video and if I'm learning new things then I'm combining the old tricks with what I'm learning now...it will be a lot easier to remember the old things that I did ..in the video.

11: Ok so that's like a kind of practical use of it...what about in the interaction between you and her? How do you think she might use the video feedback? S3: mmmm

I1: Well again let's look at your interaction with her when this video is (playing) (they both look at the video).....

.....just check out the interaction there (points to the video)....

just tell me what you think about what you see.

S3: um.....it looks like I'm not understanding more what she's talking about and looking at the (other) video..

I1: In terms of stress?

S3: I don't look stressed.

I1: You don't look stressed at all do you?

S3: No.

I1: You look totally..you both look totally relaxed....cos this works both ways doesn't it?S3: uh huh

I1: If you're feeling stressed what do you think the teacher feels?

S3: Stressed?

I1:Maybe...i mean some teachers like to intimidate ...do you think T3 likes to intimidate?

S3: Um I don't think so?

I1:I don't think (so)...sometimes the student might think "oh she's Russian Russian coaches Russians always are like this? yeah? maybe? I don't know ...ok ya so you both look completely relaxedwhichfor learning would you say being relaxed rather than stressed?

S3: ya ya

11:: I mean maybe it's in the middle somewhere you know you've got to be you know alert.

S3:right

I1: ..but ok ...so having looked at that where do you think she might go with using video?...I don't know yet because I have to talk to her as well.

S3: um...

I1:as a tool as a learning tool?

S3:um....I think she'll probably use it more often because it'll be easier for us to communicate...

I1:Alright.

S3:...after seeing what I've done and then communicating a (something indistinct) what (I) like of them something good or something bad and then

I1: So it's kind of like ...do it ...film it ...go to the video see what went wrong ...come back with that muscle memory..do it ...

S3:yep

11: Did you feel it was more or less successful, the outcomes yesterday, than the previous sessions?

S3: It was more successful.

I1:It was more successful?

S3: uh mm

I1: So ..it might be that you're quite a kinaesthetic person maybe do you think that? S3: ya

I1: ya...um alright I think ...anything else I wanted to talk about?

...No I think we've covered everything and ...we'll on Wednesday we'll continue on and she'll be probably trying to use different strategies and we'll be watching them. We will talk to you the week after that ..

S3:ok

I1: so every two weeks we talk to you so what would be really good is

...is / you said you're going to take video in to your own thing ...is what you're going to set it up and film the whole thing?

S3:ya

11:...what would be really good also is to ...when you're looking at the video maybe look at two of you together and see you know what's going on in the body language because that's the first language isn't it?

S3: uh huh

I1: ...and then also write down stuff because it's going to be two weeks so those two classes in next week ..it might be quite hard to remember even though I'll have been doing observing and I'll want to go back to things like little bits of film and stuff... S3: uh mm

I1: ...so yeah just if you good ..I know yo don't a lot of time but write down stuff that comes up ...just along the lines of what we've been talking about...ok?

S3: yup

11: Just in terms of the interaction how that might be affecting your learning...cool. S3:ok "thank you

11: Thank you so much it's really good ...and you're ...you know from our testing period to now there's been a huge jump I'm really glad that actually we were delayed starting because we're getting much better information out of you guys so it's really good...Thank you.

S3:Thank you

I1: ok chao

Appendix 1.9 DBS 3.02

Dec 6th 2011 Case Study 3, Interviewer: I1, Interviewer: I2, Student 3: S3, Teacher 3: T3

11: so this is the last interview of this cycle of these 4 weeks. We've had a chance to do a little bit of analysis of the first interview so I'm going to ask you a few questions based on some of your responses in that interview and also we'll continue looking a little bit at footage of recent classes just to look at the interaction. Firstly how are you feeling at this point?

S3: (big sigh) I'm tired. Just like body wise but not really mentally yet.

I1:yet?

S3: Yeah

I1: So you expect to mentally (tired)?

S3:Yeah yeah

11:Of course this is the week when you do your presentation. So you're feeling a little bit? How are you feeling about that?

S3: A little bit yeah.

I1:yeah just explain how a little bit how you're feeling at the moment.

S3: umm I just want to get it over with. I think I'll feel a lot better after I get it over with.

I1:The first one?

S3: uh hah

I1: And are you feeling ... confident in your material?

S3: yeah uh hah

I1: you talked a lot about muscle memory in your last interview. How do you feel the movement is in your body and in your..?

S3:umm when I'm on the trapeze I think it's a lot better than when I'm doing the improv. Because the improv still hasn't gotten into me yet. ..So like the things that I've learned ...are stuck in the muscle memory but not with the dancing part yet.

I1:Right so the connecting movements, the enchainements are starting to come in but the improv side?

S3:uh mmm

I1: And with the improv side you talked a little bit about it. Actually I don't think you did talk about the improv side very much in the last interview. What aspect of the dance trapeze I guess, what makes it hard for you to improvise with it?

S3: ah...mm. Well like in dance you don't really have an apparatus to like dance with but ..like you have to incorporate it so you have to make it different like moving in and out of it or using it somehow.

11: But like in rhythmic gymnastics you do with an apparatus don't you? S3:right

I1: You work with clubs or hoop or ..so in what way is it different from rhythmic gymnastics?

S3:Rhythmic gymnastic apparatus you make it move. But like when it's just stuck in one place and it only has a certain way of moving it can't really...That's why you have to think outside the box and make up your own movements.

11: And why is it so hard? I mean in particular why are you finding it really hard with the improvisation? Is it just the trapeze? Or is it? Did you do a lot of improvisation in dance?

S3: I did a lot of improv in dance but I think it's just the trapeze. Like I have to find in my own time different ways.

I1:In your own time?

S3: uh mmm

I1:So have you had a chance to just..?

S3: Not yet no.

I1:So what's going on with schedule that you can't actually find any free time to ...? S3:um well we had afternoon classes where we have a project right now so we've been working on that. And I present today tonight til 9pm and I can't do anything after and then...

I1: So each day for the last how many weeks?

S3: umm two weeks.

I1: The last weeks. You've been working til 9 oclock at night?

S3: Well and then we have 8 oclock classes of like our French class.

I1: What? Every night?

S3: And then that's when free training is over. It (finishes) at 8 oclock so.

I1: So you have scheduled every day stuff so you can't actually free train?

S3: (nods) uh mmm

I1:Is it possible to find time? You know you have an hour or two here and there? Is it possible to find time to do that?

S3:(shakes her head no) uh uh no yeah.
I1:Cos I know certain students do but they tend to be more the older students you know the third years and stuff who just sting stuff up.

S3: cos like I don't know where like when people have class. If I use their point or their area then I would have to move.

I1: Do you feel a little bit sort of nervous about putting something up?

S3: yeah and then like ...

I1: Excuse my rusty voice today (laughter). ... What about weekends?

S3: ummm...free training? on the weekends. Sometimes ...like I know this week it's

cancelled cos of presentation.

I1:Saturday and sunday?

S3: Sunday we don't have free training ...saturdays.

11: Oh ok Saturday's you do (have free training)...what about the previous Saturdays?

S3: Previous Saturdays?..I did do free training.

I1: Oh you did? Right.

S3: But there's the only one dance trapeze and there's other dance trapeze people that use it or there's also a camp that comes in and they use most of the apparatuses so I would come in to late and my apparatus is gone so I can't...

I1:So what strategy might you think about for like long term with that?

S3: ummm when usually I...like last time my apparatus because the little kids were using it I did muscu and just went over my routine. That's about it.

I1: So given that there's not a lot of apparatus around, have you thought about ...maybe getting your own?

S3: yeah

I1: oh you have?

S3: yeah.

I1:Sohave you approached anyone about that?

S3:ah ... I did with my mum to see like if they're expensive.

B: oh ok so you've done that already. You've approached her. Ok.

S3: and I'm thinking about getting it for next year if I get in. Yeah.

I1:And then no-one can touch it. (laughter)

S3: Right.

I1:Ok so when did you ask your mum about that?

S3: ummm like a couple of weeks ago.

I1: Ok because it was becoming a problem?

S3: yeah ... becoming a problem.

11:We're interested in what's going on in your head you know at each stage. Like now in face to face what's going on in your head now? Because last interview you were saying "I look confused. I feel like I don't understand what she's asking me because of the language thing as well. And possibly familiarity with the equipment. So what's going through your head now in the face to face interactions?

S3: mmm ... I understand what she says.

I1:You do?

S3: uh hah..but just getting the movement going. Like after I do it once and then I don't get it and then she corrects me. Then I know what I did wrong and where I need to put my hands and my legs and stuff so...

11:I'm just going to check the microphone's on cos you're speaking very quietly today because you're tired (laughter). I'm going to bring this a little bit further forward. That's fine. Sostill let's just go a little bit deeper. Maybe into a specific example of what are you thinking when she's face to face with you and what's going through your head? S3:umm

I1: Because before it was kind of like "what is she talking about?"

S3: yeah

I1: What's going through your head now?

S3: I know what she's saying but knowing if I can do the movement. Like sometimes my arms will be too tired. Then I would just like give up a little bit.

I1:So conceptually now you understand what she's saying to you ...so that's a big break through like the language thing. Why has that changed?

S3: Well...after her repeating. Like...I know the body parts now so she repeats it and then I get familiar with it.

I1: Yeah so you're familiar with the way she talks. And what is the main language now? S3:umm..still Russian and French a little bit.

I1: Do you think it's Russian or French? Because I can't really...

S3:It's Russian and French. She sometimes mixes it.

11: It's mixed. Ok. And you're getting the hang of this mixed language? Do you think it will become a kind of like a unique language between you or something? This mix of Russian and French?

S3:yeah. But if I don't understand at all she'll correct it in English. So then I know what that means.

11:So ...in terms of stress level now in the face to face. Where would you put it. Just so you can put a number on it between say 0 and 10. Like the last time I interviewed you where would you have put that?

S3: The last time or like now?

I1: You know the last time I interviewed you where would you have put the stress level?

S3: umm it was like 4.

I1: 4 it's not that high then?

S3: No.

I1: Ok and now how are you feeling?

S3:Like 7.

I1: oh it's gone up?

S3:yeah (laughs)

I1: In the interaction or just your general (stress)?

S3: Oh just like general.

I1: ok your general stress level's gone up because of?

S3: ... of different things like classes and getting things done and presentations.

I1:Right just work load?

S3:yeah

I1:So the work load is increasing and that's increasing the stress?

S3: (nods) uh hmm

11:And so is it? Ok let's put that aside that is your environment now that's stressful because of everything's coming to a point. But what about just your interaction with T3? ...Because before I think you said that you weren't feeling comfortable in the face to face but more comfortable when you're looking at the video.

S3: (nods) uh hmm

I1: Now in terms of that stress level in between the two of you how are you feeling? S3:...mmm not that stressful.

I1: No. Ok so it's come down a bit?

S3: yeah it's come down.

11: And ...how was it it working with the video? Because I noticed the last class she started doing a few things differently using the video differently. Can you pin point some ways she was using that differently?

S3: I think she used the video more now. Just like ...after every combination to see the differences of the good and the bad things that I did. yeah.

I1: Well there was a point where she actually she filmed three different transitions and then asked you which you preferred. What was going through your mind when she did that? Because I think that's probably the first time she actually did that.

S3:yeah...I like it. The different transitions ...

I1: So she actually asked you which one did you prefer?

S3: yeah

I1:So you chose the last one I think?

S3: yeah I think so yeah.

I1: ...which was the one she preferred as well. But in that change over of asking you what you thought how did it feel?

S3: It was good...because like we had some things that looked good and that didn't look good. ...It's like I guess she's knows what looks good on me and what doesn't.

I1: yeah but also? But what also happens when she's asking you?

S3: ummm..there's an agreement?

I1:An agreement? She's saying really that you also have an opinion about what looks good on you right?

S3: uh huh right.

11: So that was interesting. So what do you think might be the next step in that process? So that was the first time I'd seen her do that. That's an interesting strategy. To get you to choose. What do you think she might do next in that process?

S3:ummm ...She'll probably make me choose more. Like make me make the decisions instead of her telling me what to do.

I1: yeah I think that maybe where's she going. That's a good observation really.

...Taking it a little step further. Just visualizing a step further with that process. What do you think might happen after that?

S3: ummm...I think for me it would be a lot easier doing the improv after I make my own decisions and I know what looks better. ...It'll be a lot easier to make my combinations.

I1: mmm just keep an eye on the time ok. Let's talk a little bit about movement vocabulary. Something interesting that came up that when you arrived (it was the) first time you'd ever touched a dance trapeze or a trapeze of any sort so in a sense there's no movement vocabulary at all. Which makes improvising hard because you don't know what to do with this. You know "what am I supposed to do with this? Do I just dance around it? Do I ..?" How do you feel your movement vocabulary is?

S3:It improved a lot you know. Because now I know what each movement means? I1: Means? Just explain a little bit about "means"?

S3:Like ...each movement has a name. So like...

I1: Like a specific example?

S3:Like ...a "rouleau".

I1: Rouleau? Like a roll?

S3:yeah like a roll. ...Or ...or sometimes there's like fun names like mermaid. I know how like visualising so I know how it looks like. So that they're easier to remember.

I1:So when you say the word "mermaid" you have this visual of the mermaid. S3:yeah

I1: And the visual comes from?..When you say the word mermaid and you get a visual where's the visual coming from ?

S3: Ummm...I guess after doing the movement. After learning the movement and then the name then you put the two together I know like it sticks. Then I know how it looks like..

I1: Well that's more of a feel isn't it?

S3:yeah

I1: So how come you can know what it looks like too?

S3:ummm...I guess just to have the mermaid like .. just the.. I don't know...

11: Well like..think of the strategies she's using. ...One is she gets on the trapeze quite a bit while she's instructing. She's using the video quite a bit and she's using names. She's naming things a lot. So all those three strategies - how do they combine to help you when you say "mermaid" you've got a very clear sense of it?

S3:I don't know..it's just all like visually learning.

I1:yeah it's visually learning that's right. And you said yourself I think you're a very visual person. And I think she's using visual strategies to help. She's worked out that's how you tick.

S3: uh hmm yeah

11: With other students it might be auditory or ...you don't need the same sort of tactics. So she's using all these different tactics to really accelerate the learning and what's interesting for us is we're seeing the response. So the video plays an important part in that do you think?

S3:yeah

I1:Because it's almost like. Is it like? When you see your sequence now where ...now I know it's a funny question but..where do you see it in your head?

S3:ummm

I1: Is it you doing it?

S3: yeah

I1: ...like as a little video going?

S3:yeah I'm doing it.

I1: yeah?

S3: Uh huh

I1:You're replaying it? Or what?

S3:yeah well like going over steps. I see myself doing the steps.

I1: You see yourself doing it?

S3:yeah

11:It's not? Is it you feeling all the sensations of the rope and da da da da or is it that you're seeing yourself doing it?

S3:I'm just seeing myself doing it.

11:Ok ...so let's just get onto questions. When you're working T3 do you actually have questions in your mind?

S3:mmm

I1:And again no right or wrong with this. It could be "no".

S3: Not all the time no.

I1: Not all the time?

S3: Uh huh

11:Like for long periods of time do you not have questions?

S3:No...Like if it comes up like once or twice that I don't understand then I have a question but then I kind of get it.

I1:So when you do. Like you're saying once or twice in a class you definitely don't understand what's going on ?

S3:Right

I1: What stops you asking the question?

S3: umm...I don't know (laughs). I just don't ask questions.

I1: You just don't ask questions? From a point of view of learning. I mean if you don't ask the question does it hold up getting the answer?

S3: No.

I1: Ok... that doesn't...why is that?

S3:mmm...just from like past experience I guess from gymnastics going back to that. Either you get it or you don't kind of thing. That's why I never really ask.

I1: So if there was a question that came up in your mind like, "if I did this would that fix the problem?"..you don't ask it because you assume that question is going to get answered by the coach?

S3: well yahh

I1:Like they're going to know that's what you're thinking?

S3: yah

I1:Ok that's kind of interesting. As a general rule does that work as a strategy? S3: No I don't think so.

I1: No? So you wait a long time to get that question answered would you say?

S3:Well I think she after a while she knows that I look confused or I'm not getting it fast enough.

11:So ...let's just get back to ..ok you say it's your past experience that you don't ask questions because of the environment from rhythmic gymnastics?

S3: yeah

I1: ...and would it be correct to say that generally students didn't ask questions in that environment?

S3: (nods)uh huh

11: So it's a new environment ..totally different. So you've got that. Is there any other reason why you don't want to ask questions? You think it's just your habit? S3:yeah

[Interview continued].

I2: This is going to be a short interview.

I1: This is like a brief forward, like a forward briefing. A little bit of debriefing as well.

I2: Before briefing on what we're going to do next. We're just interested in having your impression of your presentation. How do you feel it went?

S3: Ah it went pretty good. Like I got a lot of complements after so. But my music started a little late so when I started I was off a little bit but after that it was fine.

I2: So you were planning. Your movement was set to the music?

S3: Yeah to the music yeah.

I2:So how did you deal with that?

S3: ah I just had to wait a little bit so I could be back on the music or cut something off a little bit but it was fine.

I2:You did both? You waited and you cut something?

S3:yeah yeah

I2: And while you were waiting?

S3:I didn't really wait. I just took my time to do one movement.

I2: So you took more time to ah ..ok. And while you were taking your time you were thinking about?

S3:I was just kind of freaking out because I wasn't sure why is started not from the beginning but..

I2: Just let me go through that. So the music started later?

S3:A little bit yeah.

I2: And what do you do?

S3:ah just like "oh crap ..it's not on time".

I2:ok and when you say "it's not on time" what do you do?

S3: Umm I just try to be calm and just go with the music and not freak out too much.

I2: ok I'm going to push that a little bit. And when you say you want to be calm. What do you do?

S3: ummm Not show to the audience that I'm freaking out inside.

I2:Ok and what do you do to not show?

S3:Smile.

I2: Smile?

S3:yeah

I1: Can I just..?

I2: Yeah go ahead.

11: So where did you catch up. On the ground section before you went on the trapeze? S3:Before I got on the trapeze.

I1:ok so you didn't have to adapt once you were on the trapeze.

yeah.

I2: How prepared did you feel you were for this presentation?

S3:I was prepared cos I skipped three presentations to go up and warm up. So I was ready I was warm (something indistinct).

I2: Ok. But if you take the overall session. How did that ah?

S3: ah ... I think I learned a lot and for being mise à niveau and never did dance trapeze. I think I was pretty prepared to show what I had.

I2: Ok so when you went up there you were confident, as you were saying, warmed up. What do you do to warm up?

S3: ah.. I just warm up my back and my splits.

I2: Ok more flexibility?

S3: yeah ...flexibility.

I2: Did you go on the trapeze to warm up?

S3: yeah in the beginning I did a little bit but that was about it.

I2: And did you do that alone?

S3: yes

I2: When did you decide to go and warm up? You said three numbers before why not 10 numbers why not 2?

S3: ah....

I2: What's the rationale behind the decision to start warming up then?

S3: So if it was like 10 numbers behind I wouldn't know what else to warm up and I would just sit there and become cold again. So three numbers was enough for me to warm up and stay warm until my act started.

I2: Ok you knew how long it would take you to warm up? So you calculated like that? S3: yeah

I2: Tell me about what you expected? I want you to compare what you expected that would happen and what really happened.

S3: ummm...Well I expected the music to start from the beginning. And it would have been a lot smoother if I wasn't freaking out inside. But I did so i was kind of ...going faster a little bit to stay with the music. Not smoother.

I2: But you said earlier you went I2ower. I'm confused a little bit. Do you you have to catch up with the music or did yo have to wait for it?

S3: I caught up with the music but since I was still kind of freaking out i wasn't holding my poses for as long. So I was kind of jumping in and out of the music.

I2: So the music was a big surprise and your reaction was? Do you feel? How did you feel you reacted? Like you say you were freaking out but then you were trying to hide that. I mean are you satisfied with your reaction?

S3: ummmm yeah cos people didn't notice that I was freaking out.

I2: ... So that event. It certainly made a difference. And once you caught up with the music? How was your experience compared to what you expected?

S3: ...It was good ...like...I don't know. I thing I did good. So I was proud that I finished and it was good.

I2: Ok I have another way of asking. How do you measure success? Like you know it went "pretty good". So what is it you're basing that on? What are your indicators of success?

S3: ummm...Achieving my goals. And ...um....just...completing what I wanted to finish off with in my goals.

I2: Ok. Can you tell me about your goals for that presentation?

S3: Well my strength was a weakness. So one of my goals was to be stronger in my upper body and...

I2: And did you feel ? You felt strong?

S3:yeah. Andjust learning combinations and tricks.

I2: Learning?

S3: ah..like ...different movements with the trapeze and yeah.

I2:Do you mean memorizing?

S3: yeah I memorized different combinations and movement.

I2: So your goal was to have a combination of movement that you could memorize and perform? And you did that?

S3: yeah

I2: And if I talk a little bit about movement quality. Meaning that I know you did the poses and all that. Did you feel? Did you have any objective as far as movement quality?

S3: ...mmm....not really.... Because I wasn't expecting that much in movement with the trapeze. Like on the ground. So mine was more like static. So I wasn't moving a lot with the trapeze.

I2:So your objectives were static poses and moving from one static pose to another? S3: yeah

I2: What was your rapport with the music? I know it didn't work well but when you said you placed So what is your relationship with the music?

S3: umm...well it was supposed to....I'm not sure.

I2:But I know it didn't work well. As far as your objective with the music. But what was your objective what was your goal? Like you chose the music? And you placed certain movements on the music?

11: Well did you place certain movements? Was it T3 that (placed the movements)? S3:It wasn't really placed on the music. It was just flowing with the music. There wasn't like a beat for every movement I do.

I2:No ok I understand. But when you say you were behind. Or ahead? I'm not quite sure now. But you were not with the music. How did you know you were not with the music?

S3: ummm well since now I've memorized where I should be at that, when I hear a certain part of the music. That's how I know it was either behind or too fast.

I2:So there were specific landmarks where you felt?

S3:yeah

I2: Because you also just said the music was just going through. You're not specifically on the music so. I'm just confused about your goal about your relationship with the music. Is it just background music or is ityou know and I'm not putting judgment when I say that background music as being the mood you want to create. Or is it specifically on this moment of the music I need to be at that (part)...

S3: yeah It was in that moment and then I do something else. And then the next moment I do another thing.

I2: And did you feel it worked well? Did you feel the music worked well in what you did?

S3: yeah uh huh

I1: Can I just ask how was the music introduced? Was it that you had the enchainement basically done with T3 and then the music was introduced after?

S3: yeah ...yeah

I2: ok. (to I1) Unless you want to investigate more things?

I1: I'd like to define the work "good". When you say "it was good". ...Just give me some words for "good". I'm just interested to know what "good" means for you. Just word association.

S3: I was proud of myself. Like it wasn't the best because of the music but I was proud that I went through it and glad I got it over with.

I1: Got it done. Got it out the way. And you've been stressing a lot about it?

S3: No not that much but it was getting to me but now it's over. So it was good.

I1: Like a first hurdle?

S3: yeah yeah

I2: It looks like to me also it looks like it was a stage you overcame.

I1: Any other (words)? "proud". Any other words that come up?

S3: ummm...no....

I1: "Relieved"?

S3: yeah ...relieved.

I2: "Proud" is interesting I find ...so you're proud that you...If I just sum up. You're proud that you built up your strength, that you could put together a sequence. Other things you are proud of?

S3: Being here.

I2: Being in the school you mean. Like a registered student?

S3: At the school...yeah. And actually in front of everyone.

I2: Ok just the fact you're being here is a source of pride.

I2: ...How does it go with? ...How's it going with the research? What's your ...feeling about being the subject of this research so far we've done?

S3: It's interesting like finding different skills like learning skills of. To learn different things. That I wouldn't have thought about ...so.

I2: Can you name me an example of a learning skill that you've?

S3: Just like. Because I'm a visual learner so I would have to ...because T3 usually gets on the trapeze a lot. And if it's something I don't get she would have to do it. And it helps me a lot. And when she tells me to do. Like she'll name a combination and just tells me to do it. Sometimes I get confused either by the name or I would try to visualize in my head how that movement will go.

I2: So you use visualization to...? Ok. And that is a new learning tool for you? S3: yeah

I2: And ah...I'm asking that. It's a formal question. Are you, is it ok for you to continue being part of this research into the next session.

S3: yeah yeah uh huh.

I2: Ok thank you. We are glad that you are.

11: We are glad. We don't want it to impinge. Constrict you and you feel like "it's on top of me and I'm dealing with that instead of" you know. It needs to work alongside everything else.

(Forward briefing about next session).

I2: Anything you want to add?

S3: No no.

I2: ok

I1: ok

S3: Thank you.

Appendix 1.10 DBS 3.03

Feb 16th 2012 Case Study 3, Interviewer: I1, Student 3: S3, Teacher 3: T3

11: so this the last interview for this cycle...there's going to be a two week break until the next cycle. so firstly how are you going with the research? How's it going in relation to your class?

S3: It's good.

I1:yeah....Is it in any way affecting you?

S3: no.

I1: and you're happy to keep going with the last 6 weeks.

S3:yeah

I1:alright that's great...so just quickly maybe just describe what you are working on the moment in the classes since we talked to you last.

S3: ... I've been working on cardio so like running my number more than once and so last time I ran it about 4 times.

I1: the last session?

S3: yeah..and just working on fluidity throughout the number.

I1: right so when you say fluidity what do you mean by fluidity?

S3:um the in between movements between the tricks so it's not all tricks, so it's the in between of the tricks.

I1: Ok what else? So cardio, so endurance and transitions - the things between the tricks. What other things are you working on?

S3: ...just bringing your personality to the movement.

I1: ok in what ways?

S3: just not having like a blank face ...smiling..or having a focus point.

I1: a focus point on?

S3: on the dance trapeze so I'm not looking around.

I1: when you say bringing your personality to it...can you just describe a little bit about what you think it is you could bring in your personality?

S3: well like I think that I'm/ I want to get every little step correct so I'm not focused on like smiling and/ I work to get everything really correct so I'm not focused on the in between things.

11: So let's just go back to the question a little bit. When she said, this is T3 is it? S3: uh hmm (confirms)

11: Bringing out your personality. So you're talking about transitions and stuff let's talk about personality. What things are you working on there to bring to the number?

S3: Just adding different face expressions.

I1: so ok talk about different face expressions.

S3: uh...just smiling.

I1: Other face expressions?

S3: no.

I1: so where does the smiling (come from)...when you say "just smiling"...how is that connected with the idea of bringing things from your personality?

S3:because I enjoy what I'm doing...so she wants me to show that I enjoy what i like to do.

I1:right ...what other things do you feel? enjoyment when you are doing it. What other things in your personality do you feel ?

S3: um...determination.

I1: right

S3: because I'm determined to get it done and perfect kind of.

I1: Would you want to show determination in your number?

S3:yes

I1:oh ok in what ways?

S3: ah ...so they can see that I really want this and for the audition.

11:ok well we'll talk about the audition then...so enjoyment, determination. I'm still interested to know that side of your personality..how you want to bring that to the number?

S3: um...I'm not sure.

I1: ok ...so let's just go to a question. You have two teachers right?

S3: uh hmm (confirms)

I1: you have [other teacher] and she takes you for?

S3: ...an hour on Friday and Tuesday.

11: oh so she takes you for two hours and T3 takes you for two hours but T3 is the main teacher?

S3: yep

I1: Why is that?

S3: um...because when we started I didn't have [other teacher] a lot because she was sick. So when we started doing the combinations it was more of what we worked on together.

11: ok so she (T3) ,by default because [other teacher]was sick, has become your main teacher?

S3: yeah

I1:so .. describe the difference perhaps between the two for you?

S3:um..[other teacher] likes to have more emotions like connecting with the music andT3 ...um......I'm not sure.

11: Well maybe ...what about in the way they teach? Or the structure of the class? S3: um...[other teacher] ...because she has Kevin also because there is two people so she tells me what to work on and find different ways to either do the combination or just play around on the trapeze.

I1: so you are left on your own a bit more with [other teacher]?

S3: yeah

I1: and what sort of things does she ask you to do in those periods when you are on your own?

S3: um...like sometimes she lowers the trapeze down so I will just play around like on the ground and then she gives me a certain time length and then she comes back and I have to show it to her... so and it's easier kind of because then I actually can think about things to work on.

I1: ok so you say it's easier. Why is it easier in the way [other teacher] does it? S3: um...because she gives me time to work on it by myself.

I1: ... with T3 ... does she also leave you for moments?

S3: yeah

I1: so what's the difference with T3 when she leaves you with those moments to [other teacher]? You say that [other teacher]....

S3: yeah gives me time also...but I feel like with T3 I have to rush kind of to get it done I guess.

I1: um ... are there any other differences in the way...?

S3:umm ..not really.

I1: so ...let's go to the free training you did on Sunday. Am I right in saying there has been a bit of a gap with free training until Sunday?

S3: yeah

I1: so what was it that happened that ended up with you free training on Sunday?

S3:because we were getting...because Saturday the free training got cancelled so I free trained Sunday because we were getting close to the auditions so I felt like I needed a little bit of extra time to run my number and see what I can do.

I1: so just going to your thoughts. So you originally wanted to free train Saturday? S3: yeah

I1: ok so you found out that you couldn't. When did you find out you couldn't?

S3: they usually have a notice on the board, on the bulletin board.

I1: so you looked on the board like Saturday morning?

S3: yeah Saturday morning.

11: and then what was going on through your head then...what were you thinking? Just take yourself back to that.

S3: ok ...I wanted to do musculation so I was like "ok well free training closed so I'll do musculation." But there was too many people in the musculation room because they found out probably the same day that free training was closed so I didn't do musculation

found out probably the same day that free training was closed so I didn't do musculation either, there was too many people. So I didn't do anything Saturday.

I1: ok so what did you think after you went to the musculation room you saw you couldn't get in? So then what did you think at that point?

S3: um.."I guess I'll rest and then do it Sunday."

11: ok so at that point you knew Sunday was free. Ok you were planning to do Saturday and Sunday were you?

S3: Well just Saturday but because Sunday I was planning to relax because then Monday I had trapeze.

11: ok I see so one of those two days i got it ok. so on Sunday ...Just take me through Sunday. from getting up...what were you thinking, what was your plan?

S3:my plan was ...to do musculation first and then run my dance trapeze number, I'll do the warm up and stuff and run my number without doing the rigging up and down for like spinning and stuff so just the static things. And then ...um...that's about it.

I1: so how long did you do your musculation for?

S3: ah half an hour.

I1: like a kind of warm up?

S3: warm up.

I1:and then you went to do the trapeze. Now how long were you in there for with the trapeze?

S3: about half an hour also.

11: so take me through what's it's like to go/ like take me through that half an hour on Sunday.

S3: on the trapeze?

I1: yeah like going in..just take me to how you're thinking at that point. Take yourself back to that point, just take me to it.

S3: umm ...I don't know.

I1: you had to go and get your trapeze...

S3: yeah I had to get my trapeze, find the point where I wanted to be, because I couldn't take the centre because people were doing either german wheel or roue cyr so I took in the corner. Then I got a mat. I put at a comfortable height where it was not too high or not too low so I'm not freaking out when it's too high.

I1: so you do freak out when it's high?

S3: yeah a little bit. After I go on the ropes I get a little freaked out because when I look down I feel like ...Then I have to hold on even tighter than/ if something else happens...just in case.

I1:so you get the mat, and you put the trapeze at a good height. What's in your mind for...do you have any thoughts about what you want to do at this point? S3: mmm..I don't know...

I1: like you are going to run the number. Anything else ...any other...?

S3: umm.....uhhu (shakes her head no)

I1: no...ok. so just running it..now did you use video at all?

S3:no

I1: so then you finished?

S3: uh hah (confirms)

I1:and just tell me what you were thinking when you finished?

S3: um...I ran it about twice...and I kind of got tired and there's another

trapeze...[another student]... he also does trapeze so I had to give my trapeze to him so he can have time to do his number.

I1: ok is he also mise a niveau?

S3: well..no he's in the high school program but he's also auditioning for the first year. I1: ok I see right

S3:so I gave my trapeze because he uses the same one so.

I1: and when you gave it to him, when you left, what thoughts did you have in your mind about the training that you'd done?

S3: I was glad to do it but I was really tired ...and ...

11: what did it feel like? What did the whole session feel like once you'd finished. I mean did you have any thoughts about the whole session? You were glad....

S3: yeah I was glad I did it and that I needed it like if I wasn't going to do it I was going to regret it "oh I should have free trained Sunday or Saturday."

I1: so when you say you needed it, what's this feeling of "i needed it."

S3: Just to go over things that I haven't done in a while.Just in case, that I still have them, and that I didn't lose the technique for them.

I1: so had you not done some things for a while in your number?

S3: well just like from not doing it over the weekend and then going to Monday so just making sure that...I prepare myself for Monday for the class.

I1: ok alright so ...then you trained on Tuesday night as well was it?

S3: Tuesday night yeah.

I1:So did you plan to train again on Tuesday night after Sunday ?

S3: yes because our class got shortened. Our class was supposed to be 3 hours long but it was 45 minutes.

I1: and this was on Tuesday?

S3: on Tuesday night yeah. ..and so I had nothing else to do so I went and free trained on Tuesday night.

I1: and again what was the structure of the free training?

S3: um I took it easier on Tuesday because I had a long day on Tuesday because I started at 8h30 in the morning with dance trapeze and then...so I didn't really...I didn't run my number. I just went over a couple of movements..

I1: so what movements did you choose?

S3:um the one with my leg on the rope and then I tried to position my arms but I felt that didn't really work without...because I go from sitting to one leg on the rope. Because usually I did it from standing and it was a lot easier but from sitting I have to reach higher with my arms and then when I reach higher with my arms and I turn my arms are already high. And then when I lower my arms my leg goes down so then I don't have space to flip over to go back to sitting. So I was trying to figure that out. I1:so this was a problem...so you tell me..why that movement particularly?

S3: ... just the coming back down to go into the next movement was a problem but I think I know what I need to do now.

I1: have you actually put that into effect yet ...what you think you need to do? S3: no not yet.

I1: ok so what do you think you need to do?

S3: when I go from sitting instead of putting my leg higher I'll just put my leg lower and put my arms a little higher. So I'm still like not really lopsided but I still have space to put my leg lower instead of..like that.

I1: So this is just something you've worked out in your head?

S3:yeah

I1: and what's the strategy with that? It's in your head at the moment.

S3: ah...the strategy with movement or...

I1:well you've got it in your head I just wondered what the next step is?

S3: I'll probably..well I have class, dance trapeze tomorrow so I'll probably do it tomorrow.

I1: with?

S3: [other teacher].

I1: If it was with T3 would it be the same strategy?

S3: yeah

I1: What do you think T3's/ do you remember that?..you watched some video feedback let's take you back to it...and she said to watch it as if you were an acting teacher.

S3: right .. yeah

11: what do you think she's sort of saying when at the very end she said "I'm not seeing the artist just an interpreter"...that little exchange...what do you think she's saying there?

S3: I wasn't showing like I was having fun that kind of thing. So like showing my personality and adding that and I was just going through the movement instead of the actual the artistry of it.

I1: So when she used the word "artistry" what does that mean to you?

S3: ah...not just doing the movement step by step but all the in between things and adding your own style to it, personality.

I1: ok "style" so what's a style, what's your own style?

S3:um... mine's a contemporary kind of like dance.

I1:Explain a little bit your style..so it's contemporary.

S3: it's not sharp it's like smoother dance wise kind of and...

I1:Right .. is that something you want to present as well?

S3: yeah

I1: That's a style you want to present.

S3:and playing with time ...having things faster and slowing some movements down and contrasting with the music.

I1: ok ...and just getting back to this type of contemporary movement that is your style we're talking about. where does that come from ?

S3: Probably the dance.

I1: Your dance....and why do you why do you want to have that style and not say another style.

S3: um...because it's already kind of part of me so I don't have to relearn another style and be confused of how that style is supposed to be than what I can do now.

I1: ...apart from that reason which is pragmatic I guessany other reasons why you particularly want that to be your style?

S3: um...no.

I1:alright I won't keep you any longer...we are going to break for two weeks then coming back into the next session and T3 will be continuing with her plan with you on particular aspects. What do you think the main thing is she is working on with you right now if you could say it in one (word)...

S3:the artistry part of it.

I1: the artistry...alright thank you.

S3:thank you.

Appendix 1.11 DBS 3.04

April 13th 2012 Case Study 3, Interviewer: I1, Interviewer: I2, Student 3: S3, Teacher 3: T3

I1: This is the last review of the research cycle and first I want to thank you for taking part. It was really great...and I guess we just want to ask you in a more global sense how you feel you compare how you are now with how you started? What would your thoughts be?

S3: When I started

I2:This year.

S3: Yeah ...when I started dance trapeze?

I1:With T3.

S3: I feel like it was very basic ... the classes were going slow ...

and like right now they're a lot faster and I just warm up and then do a couple of things and then run my number.

I1:So at the beginning your classes were different?

S3:yeah

I1: In what way were they different?

S3: Just working more on technique was the first part and just learning new things.

There was more ... the basics of them.

11:So as a learner from that perspective how do you see the difference to how you are now to how you started as a learner, your learning process?

S3: ...It's a lot easier to learn visually, I understand a lot visually. And I pick it up faster so I feel like I've picked up a lot of things faster when she shows or I see someone else doing it I pick it up faster.

I1:So this feeling of visual learning...is that a new thing?

S3:No I think I had it.

I2:So what's the difference between how...because you mentioned that as an example of how different you are?

S3: yeah

I2:So what's the difference if you had that?

S3: um...um...I'm not sure.

I2: Give me an example of something you saw and were able to pick it up.

S3: Um the planche sides to the side...physically knowing where to hold the position it helps [more] than if someone just tells me do it to the side or like I don't know it just helps physically feeling it where to hold it.

I2: You mean you have an experience..a physical experience.

S3:yeah

I2: So when you watch?

S3:um...I can see where ...how I need to hold it or see how the position should be.

I2: As you're watching it?

S3:yeah

I2:Because you've had a physical experience of it?

S3: yeah

I1: So ... let's stay with the visual learning. So with your training this year what aspects of the learning process have been helpful in that way ...what aspects of teaching with T3?

S3: Um ...her showing some of the movements and video taping the classes and then going back to the video and seeing what I need to correct and do. That helped a lot.

I1: In class and also..?

S3: Yeah like free training and in class.

I1: Right so you had the video in free training as well.

S3: yeah

I1:How did that work in the free training?

S3: Well ... I usually have a friend come and free train with me and they'll video tape it and we would look at it.

I1:So is that a new thing for you? Working with a friend with the video?

S3: No.

I1: You did that before?

S3: yeah

11: So getting back to the question of as a learner what's the difference when you came into the school and how you are now. How do you feel as learner in class now to how you...try and take your mind back to that first class.

S3: um...the first class ...I wasn't given a lot of things because I was new to the apparatus so it was more of musculation and see what I can do and see what I can hold and where my strength is ... And I feel like now I'm strong enough to do things and I get more opportunities or other exercises to do.

I1:So more opportunities? In what way?

S3: Different movements that I thought I wasn't going to get to when I first started. Because I thought I wasn't going to get strong enough for them.

I1: So the strength gives you more opportunities?

S3:uh humm (nods)

I1: With those opportunities what other things? I mean obviouI2y there's a change then isn't there as you get stronger. So what other things change?

S3: umm..I feel like it's hard. Like the little muscles that get stronger ... it's hard to ...um...(shakes her head)..

I1:Keep going ...so you were talking about little muscles.

S3:I feel like it's harder to be flexible kind of at the same time. Because you're getting more stiffer and then you have to keep stretching more.

I1: So with doing dance trapeze you've had to do more flexibility?

S3: yeah

I1: To keep it?

S3: Yeah

11:What do you think are your strengths? You know how you are as a learner? What do you think are your strengths?

S3: um...I pick up movements fast..like when I see someone do it it stays in my mind and I imagine them doing it so ..that is one of my strengths. Another one ... (shakes her head doesn't know)...

11: What about ... well actually let's go to this. You are saying that you can pick up movements. At the beginning you were talking a lot about memory and trying to memorise things and it was difficult. How has that changed?

S3: um

I1: Memorising things?

S3: I used to see myself doing it more often than verbal from teachers so when I get the verbal and then I do it I just imagine myself doing it. Instead of remembering the verbal. I1: So that process has changed from ...? More often visual?

S3: ah ... yeah

I1: so the memory has changed. What other things?

S3: um...I feel like I'm more aware of the movements that I do. Because when I first started I just did it. And I didn't really pay attention of ...each little position where it's supposed to be. Like when I first moved it was like to the side ok but I didn't really pay attention to that.

I2: Can you give me an example of something you would do now differently than you did before?

S3: Like something in the ropes that I would do and I would just do it without knowing where my leg would be ...or I would just have to hold on and put my leg there. I wouldn't know if my leg was pointed because I was just focussed on holding on. I2: ok first and now.

S3:But now I can feel every ...like where my ankle is how my knees are I don't really focus on holding on.

11:So it's not like. Would you say it's like you're seeing more past it than before? S3:yeah yeah

I1: With your interaction with the coach with T3 how has that changed? S3:um...I feel like we're talking more in a way and I'm putting more of my own things into the movements.

I1:so can you give a....there's two things there. So can you give an example of "talking" more like you know like take yourself back to the last class. Give me an example of... S3: um ... well when I worked with [other teacher] we added some stuff so I told T3 what we added and then we worked on that and we kind of changed it a little so it fits with what I did before. And also if I ... if we got stuck on a movement where it's awkward for me either to stand up from sitting to standing up on the trapeze. We would figure out how to ... make it more smoother.

I1: and with the talking who would start that process...now...if there's a problem? S3:I think she does but I also know and then we just correct it.

12: Once again we like to fall back on examples... concrete examples where that happened. There was a problem and you had something to say. Is there any moment?S3: it was the sitting to standing. There's different ways to go from sitting to standing instead of just putting my legs on the bar and then standing up. So there's more...I2: Talk me through what happened.

S3: um.....well there is different ways to stand but instead of repeating them I had to find another way to stand up.

I2: When you say I had to find...

S3: ..instead of repeating..

I2: But I know you had to find it because...?

S3: ...so I don't repeat my movements?

I2: But you know you don't repeat it. How do you know that?

S3:

I2: ok I'm sorry I don't want it to sound like a trick question.

I2: So you're sitting you need to stand up and you say you had to find....the "had" is an obligation that comes from ?

S3: ... myself?

I2: You wanted to find different ways of going up?

S3: yeah

I2: So you're sitting and you had to ...because you wanted to find different ways...now talk me through. Once you had that decision that you wanted to find a different way up what happened?

S3:um...my hands are in the ropes and then I kind of sat down to my knees to like jaret and then ..but my hands kept I2ipping down. When I put my feet on the bars it was awkward for me to pull up ... so we changed that to me still having my hands higher on

the rope and then I just turn to the side so I don't have to just drop down.

I2: When you say we changed it ?

S3: Me and T3. We talked through it.

I2:When you talked through it tell me what you say what you said?

S3:

I2: You're sitting on the bar...your hands there. You know you don't want your hands to I2ip and ... what happens then?

S3: Well ...she says if I turn my body to the side how can I move my feet down on the bars but because it was awkward for me to flex while I was sitting on the side also but then I got it and then it worked.

I2:When you say "you got it" what happened?

S3: ... it was easier to stand up.

I2: Ok so you are on the ropes T3 says try going on your side and you felt it was awkward.

S3: yeah for the first time.

I2: And then talk to me about what happened next. So you try it, try to put yourself back to that moment. So you did a discussion about it doesn't work when you I2ide so T3 suggests to go on your side. And she says try to find a way to put your feet on the bar...and then what happened?

S3: umm...the first time I tried to put my foot on the bar I think I was too sideways so when I put my right foot across my left leg it was blocked because there was the rope on my leg so I had to not have a sharper angle .

I2: So you realised that the angle was not right and then what happened?

S3: And then I tried again and I got my foot on the bar and then I stood up.

I2: And you stood up and what happened?

S3: We agreed that it worked and then we kept on with it.

I2:When you say we agreed that it worked. Tell me exactly what happened when you and T3 agreed. ...So you're standing up and then what happened? S3:

I2: When I say what happens what was said what did you think? What did you do?

S3:

I2: You're standing up you try it first time the angle was wrong you could not ...you tried again the angle was different you could put your foot you're standing up. Now you're standing up and then what happened at that time. Or what you're thinking or what do you say or what you do or what does T3 say?

S3: ...mm..It was just easier...

I2: You felt it was easier?

S3:yeah

I2: Ok so you felt it was easy? And then what happens?

S3:(shakes her head doesn't know)

I1:..Who speaks first in that situation?

S3: I think she would do.

I2: And then when you said I think she did what did she say?

S3: ...that it works.

I2: She says it works.

S3: yeah

I2: And when she says it works what happens then.

S3: ...I say ok. (laughter)

I2: you say ok because?

S3: That it's not an awkward way to get up and it's smoother.

I2: So let me just talk with you at the beginning. I'm playing with you. (laughter) (to I1) so you are going to transcribe all that! (more laughter) So you try one way it doesn't work you try the other way you get up and you feel it's easier. T3 say it works and then?....When it T3 says it works....?

S3: ...mmm....I don't know...mmm...

I1: Is there ever time when say..can you take us to a situation where that same interaction happened ..she said ok that works but you didn't think it worked and you thought there might be another way to do it. Was there any time like that? S3: I don't think so.

I1:So always in that situation it kind of affirmed what you were thinking? S3:uh huh

I2:So T3 when she says it works you are agreeing with her essentially. Am i [right]? I don't want to put words in your mouth but you already said that it felt easier. S3:yeah

I2:So when she said it works I presume that you agree with her because you already had that experience. Sorry that was a little experiment I wanted to do to break down the moment and see what happened exactly. Let's continue on the questioning lines we had. I'm sorry.

I1: yeah you know..it's ...as you say you do a lot of stuff visually and not so much aurally we have to dig a little deeper when we are interviewing you to find out what the process is. ..What would you say was a weakness perhaps in your learning as a learner at this point.

S3: umm ... the aural if someone gives me something that...umm..just the verbal meanings of movements because I wouldn't know what they would be so I wouldn't know how....

11: So give us a specific example of when someone's given you a verbal instruction and it's been a problem.

S3:When I first started [other teacher] made me write down all the new things that I learned and then draw a little picture next to it so it was easier for me to remember when

I do it. Then when I hear the word and then I look at the picture I was like oh ok know what the movement is.

I1:Right

S3:Because I would go to the picture instead of...

11:Ok so can you take us through just the same process you just went through there...a specific situation where someone gave you a verbal instruction but you couldn't carry out the instruction because you couldn't visualise it.

S3: uh mmm

I1: Is there something? Take us through...something..

S3: ...There was one movement ...it was moulin...

I1: Sorry?

S3:Moulin

I1:ok

S3: I would never remember it butI would get over it by visual...like when I do it I.... I1:So the first time someone said ok I want you to do windmill or moulin how did they describe it to you.

S3:ah one leg in front of the bar and the other like behind with two hands on the bar. I1:Right so when T3 first said "do this", take us to an example where,,,because you're bringing this up because this was a problem. So take us through what [happened]..the first time she said "do the Moulin".

S3: I didn't know how it worked so when I did it I didn't have the momentum. I just kind of fell down I didn't have the rotation. That's when I first learned it. And then after a while she told me to pull up in my arms and have the bar touching the back leg and then looking out and going forward to have the momentum to go round.

I1: So when you did it the first time and you didn't get it what happened next?

S3: I kept trying because I thought I could get it but it wasn't working.

I1: And how long did that go on for?

S3:Not that long...umm...I did it a couple of times.

I1:A couple of classes or in the same class.

S3: No just the same class.

How did you get it?..I mean so you kept getting verbal instructions so how did you get it. It took a while to get it right. How did you get it right if you were just getting verbal instructions?

S3: umm...just my muscle memory END OF TAPE

Appendix 1.12 DBT 1.01

Nov 23rd 2011 Case Study 1, Interviewer: I1, Interviewer: I2, Teacher 1: T1, Student 1: S1

11: ... we've now observed a class and we have got something we can talk about and think about and we're still thinking about what is the best strategy. Is there a strategy decision training strategy that's appropriate for S1? So that's our you know a big challenge. But just to get to some specific questions.We would just like to talk about the three year plan a little bit more. The three year plan of S1. ...What how did that happen like did he come to you ...with this plan? Just to recap a little bit.

T1: No ...not really ...we speak about the different evaluations specially this evaluation in December.

I1:right

T1: And we plan to ...to do a presentation but only manipulation.

I1: mmm

T1: ... and I ask him "why only manipulation?...and why don't you want to put ...classical..not classical stuff...but what we worked on also during the first session..because we didn't work only on the manipulation..we worked all the program"...and ...he ..said to me he wanted to go deeper and deeper on manipulation and test the material in front of the public. And for me it was an interesting point and during the conversation we [had] a discussion....

I1: argument ...discussion?

T1:interesting and at this point we plan for three years because "if you do that in December what do you want to do what is your point of view in April? and after that after that?" So for the first thing he wants to test ..the material not classical material like technical stuff with diabs and that. We work on (it) but we don't want to present that. And as it is coherent for the three years I am in agreement with that.

I1:and so this plan started like since he was at the school or do you think he also had some ideas from before with this plan?

T1:This plan?

I1: The three year plan? When did it start to happen?

T1: I don't know ..during the audition I asked him "what do you search for ..when you come? You want to come into the school the National Circus School for three years but what do you expect?"

I1: yes

T1: ...and we made a list of what he wanted to train on and all the stuff he wanted to have.

I1: Did he have this list for you?

T1: yeah.

I1: He already brought a list to the audition?

T1:no no no we speak and I wrote the list ..not on my second book (indicates a note book that is not with him at the school) but it's not there and after that in September I asked him to do a list of all he wants to work on and he's really organised ...so he classified ...without stick...with stick..only one diab and two sticks...and after that/but it was a partage?

I1: partnership...sharing?

T1:Yes...sharing...he brought his objectives and we discussed it and then after that I did a list of the things to do...for the plan.

I1: the three year...

T1: not the three year plan...but the plan you have to give to..

I2: the course plan

T1: we didn't write the plan of three years.

I1:...the one til December.

T1: In our own head we know...

I1:...yeah

T1:...we know not exactly but we know the direction we take

... but it's not ... April we do that that that that this technique this technique ... in the second year we do that that that.

I1: mmm

I2: ...with another student usually you would have specific aims...by the end of the session you should be able to do this trick and that trick and this trick.

T1: yes

I2: Usually you have a plan like that but with S1 you don't do that?

T1: It's specific for each student ...for me it's not imaginable to come and say "I don't know you but for December you have to that that that that ...it's impossible for me to do

that because they have a certain level and they have also expectations ...it's not for me to make them do it...I can ask to S1 "ok I want you to do 5 diabs and a really technical Japanese act"...but he don't want to do that.

I2: He doesn't want to do that....but with another student?

...what's different between the plan with S1 and the plan with the other students?...or is there a difference or is it the same thing?

T1: oh yeah ...there's a difference because S1 has already 10 years practice of diabs...he has already 1 year at lesac(?) (Ecole Cirque de Bruxelles) he has already done a complete act of diabolo and we could start from this act and improve the act and add some techniques or different stuff but he wants to test something different and I think he wants to make the practice of diabolo bigger larger in using only diabolo only stick ...explore all the facets of the diabolo.

I2: But I understand that ...I am going back to that question...I understand that you're working at a different level with S1 but as far as planning ...I know the level is different ..but the planning the process of planning the class...is it different?

T1: In the class?

I2: No no no the overall objective let's say for the session in the year. How do you do that with the other students ...how do you that with Sidney for example? How did you plan it?

T1:ah

I2: How did you plan your objectives for example?

T1: We spoke about what we can do now ...which direction we want to take...and after that ok the next level is here so maybe you can do that and that/ The first year is quite different because we have time to expore ..and that's why with Sidney I made a plan but after that he discovered the rope only the rope and we worked a lot on the rope and we discovered a lot of material also..

T1: so the objective...

I2: The course plan?

T1: A little bit i wrote a research on using the rope that I don't know where...maybe we spent two days and after that "no it's not possible it's not interesting we have nothing"..but the the research on this rope was really interesting and we worked on that all the session so that's why present this stuff.

I2: But you also with other students you discussed with them several objectives...

T1: yes all the time...often it's important to respect their expectations and to go in the same way. I think we go further when we go with them on the same way instead of "do that do that." (imitates a student's negative response) .."I don't want to". "Yeah because I am the teacher and do that..I don't care".

I2: And what makes you, sorry I'm going off completely ...

I1: no no go for it.

I2: what makes you adopt this strategy?

I2: Is that different or you always taught like that?

T1: Maybe with the younger like the PFS it's different because they don't know where they go or what they want exactly or... and it's the beginning also of the activity so maybe I pose more suggestions for them.

I2: So it's an age thing experience maturity?

T1: Yeah...experience where they come from ...where they want to go.....and during all year it's quite the same . I prefer that the motivation comes from the student instead of I arrive and "go go go ok you run na na na na."

T1:If they are really tired or they have a lack of motivation I'm here for them but I prefer testing their mood..

I2: Their mood.

T1: yes and go with this mood ... I think ... I'm not sure but think this is more constructive instead of going against it.

....Sometimes yes we have to discuss and "are you sure you want to do that? and with S1 he told me "oh I want to present maybe this kind of show" and I confronted him a bit. In order to have his point of view and not only "I just want".

I2: So he can defend his point of view.

T1: Yah and I have to defend his point of view ... to the school. It's quite risky.

I2: Can you tell us about that?

T1: This stays here? (everyone laughs) No no I have to defend that (to the school management) because maybe it could be a surprise. The expectations of the school are maybe there (indicates a height with his hand). The school wants to ...the school knows he is really good ...the school wants to see a wow act technical and I am a technical teacher so the school wants to see technical stuff but if we don't do that (experiment) in the first year he can't do that during the second year and ...

I2: And why not?

T1: Why not? .. because in second year he has to think about his act and ...

I2: His act you mean his finishing act?

T1 : yeah the third year epreuve synthese act.

T1:That's why for the first year we want to test material material for maybe transitions maybe for when he drops...when he drops how he can do to grab the diabolos so we made all this stuff to make the act more spacious instead of only technique and he drops and it cuts thepersonality, the character ...and after that it's not to present all the stuff the manipulation stuff but he has to test this against his comfort zone ..because it's not comfortable for a juggler to do what he is not used to doing. That's it. ...and it can be stressful.

I2 : You can be stressed?

T1: ...I'm really ..for me for S1 I'm sure /if I'm not sure if I have (something indistinct) /but I am sure that's a good direction that's good for him globally for the three years.. T1:..but for the December presentation it's a risk to be judged for him for me..

I2: ...because you're going to be judged also.

T1:yeah..through the presentation we are judged I think..(makes a "that's how it is" gesture with his body).

I2: ok

I1: You just answered the first three questions. (everyone laughs)

11: Just going to the/ just looking at decision training strategies/ going to the video feedback ...the specific example where I said to you.

T1: Yesterday?

I1: Yeah it was yesterday.

I1: "Ask him to do some video feedback". ..and he replied he didn't want to. And what he was asking was he wanted the feedback from you.

T1: (S3 said) "It's not finished and i don't want to see" ... what did he say just a little before that just after?...

oh oh yes..."I prefer your point of view and I don't want to see what the public are going to watch I just want to feel what I do".

I2: But he still wanted your feedback.

T1: yeah yeah he told me "I prefer your feedback than the video feedback".

I1: Do you think he's asking for more direct feedback now that you're in performance mode?

T1: Maybe...more as we discussed I'm more "try that try that try that" and it's funny because he's listening and he tries it "oh yes that's interesting"..but he doesn't incorporate the stuff in the act right now..

I1: Immediately?

T1:Immediately no.

11:What does he do? What does he do with that? What do you think he's doing with it? T1: He stays with the older version and after that ..outside he's going to work on what we worked on and maybe if he feels the technique and the feel is stable he's going to put in the act the new stuff.

I1:Have you seen an example of that happen?

....(long pause)

T1: Not for now.

I1:But you suspect that's what's happening?

T1: I have not a precise example....but I know it happens..

I1: Because why? Because you see him practicing?

I2: What makes you say that he's working on what you talked about?

T1: Ah during the training?

I2:You see him.

T1: Yeah yeah ..he's not "oh yeah yeah it's a good idea" and after that he works on other things

he's "oh yeah it's a good idea" he works on it he works on it he tries different versions but after that each day we try to present to ...for the presentation...and he didn't put the new stuff immediately..

I2: But is he going to put it the next day the next year or what?

T1: I don't know next day I didn't come but yeah..

I2: Eventually it will come out.

T1: The acts is growing up ...evolving.

I2: And why do you think he doesn't put it into it?

T1:Maybe he has to find his own reason to do that? Because he is really (mimes "in his head")...

I1:Everything has to be on his terms really..

T1:He has to feel it he has to have his own story why he does that so he/ I think when he repeats the movement he repeat to find his own reason not only to do (mimes doing two movements robotically) it's not only the movement.

11: It will be interesting to see what he's like as an interpreter like in say creation week where very fast he has to immediately do what someone is asking him to do.

... it would be interesting to watch..

T1: During the creation week.

I1: Like in creation week the concepteur will work with him and he will have to immediately respond.

I2: He won't have time to.

I1: He won't have time to say " ok I'll take this away".

T1: But I don't know.

I2: If he works with someone directing ...

T1: But I don't know I haven't seen it.

I2: No no it just a question we are asking.

T1: I don't understand the question excuse me. (pulls a face ...laughter)

12: If he is working with someone who's directing him and someone says "try this".

That person probably wants to see immediately.

T1: oh yeah yeah

I2: If I was the director and I was directing him and I said "try this" I would want to see it.

T1: Ok

T1:I think he can do that but as his plan is on one year and three years ... he can take his time also.

I1: ok he can adapt.

T1: But if it's an emergency for example for the creation week ...I didn't see him during the creation ...I imagine that if you have just one day of creation he's comfortable to do it. When we did improvisation he suggested he had a good proposition.

I2: I have a question for improvisation but let's finish our ...(to I1) you have suggestions to make ...make sure you do that before...if we have time I may get back to that..

I1: So we just had some thoughts about how we might use some decision training into what your process ... something and these are just suggestions really... suggestions ...so we're not saying it's not working because there's obviouI2y is a great rapport between the two of you and I think you are taking as you say a big risk but I really admire the way that you are supporting him in that process but what we would like to do is still...

T1: Disturb?

11: Ya apply just from our personal perspective of seeing is there some decision training tools that can (apply)? ... and one of them is when he's working his research at the moment in his performance piece we feel (he) is very quite theatrical like his gestures he's on a level of intensity ...niveau de jeu.. he's at like at 10.

T1:yes

I1: Really emotive and what would it be like as a tactic teaching tactic to say "ok I want you to try it at 1, at 0.5".

T1: ok yeah

I1: You know just to see (T1 writes the idea down in his book)

I1: And then to look at the video feedback to see what his response is to it.

I2:It seems that he does a lot of ..he theatricalises before you know ...I don't know if it's something you asked him to do or he's doing that naturally because that is the way he performs but he will throw the object and then he would...

I1: React to it.

I2:React like a .. and it's very very theatrical.. so ...

T1: very very?

I2:Theatrical.

T1:yes

I2: So one of the things we could try to do make him ...because I think that's comfortable for him ...and that probably means

T1:Comfortable but I think he has understood that it's a good trainingyou can't seperate technical and theatrical.

I2: I don't mind the theatricalisation it's how it tranI2ates into his body...I guess we're talking level of theatricality not the fact that it's theatrical or not.

T1: ok

I2: But the level of what he's doing is very big.

T1: Too big?

I1: No no there's no "too" or "not" it's just...

T1: Too big for a technical...

I2: It's big..we're just wondering if you can nuance that.

T1: Ok ok.

I2: If you can gauge differently his level...

11: For us to be able to see what.. that type of feedback ...how that affects his research. T1:Ok...but it's a good suggestion.

I1:ok

T1: To do.

I2: To try.

I1:To observe.

T1:I really agree with that.

11:The other one was his/ we're (indicates himself and I2) both contemporary dancers well (looks to I2) you're a classical dancer and then you did contemporary is that right?/ I'm contemporary dance so when he/ and he uses contemporary dance in his movement. Now with his contemporary dance it's only a small part of the whole genre of contemporary dance what he uses in his body...so we're interested in whether using modelling with other forms of dance... so you're showing him William Forsythe or Jet Li or Jackie Chan or Fred Astaire or you know...

T1: oh ok (writes again in his book).

11: ... Other people who manipulate objects who use dance or martial arts or you know other forms of movement and whether this might change his/ he's got a very nice flow ... his movement he has natural flow in his movement he connects movements well but

it's a style of dance that he knows but what else does he know? T1:ok

I2: We were wondering what are his models you know?

I2: We want to be sure we're not the ones talking about dance... we want you to talk about dance.

T1:ok

I2: Ask him what are his inspirations for dance...when he says he wants to dance what he think he wants to dance...what is his model ? ... what does he have in mind? ... and does he know many different types of dance?

11: Because we were talking about the dance called/ a choreographer called William Forsythe who used architecture, the body in space, like for instance improvising north east south west with the leg and with the arm do high low high low middle north south west east...legs go one way south east ...you know like 3 dimensional architecture and it's like improvisation... a bit like your grid ...your grid idea? ...you know with your grid?

Similar?...but in 3 dimensions.

T1: yes

I2: He's developed that like 3 dimensions.

11:3 dimensional so you have north south east west then high middle low then on the floor...

T1:Not on the body for dance but specifically for juggling we did that also (points to a drawing of the grid) in 3 dimensions as one he's juggling with 2 diabs he has to (indicates moving the diabolos across a vertical plane that is a grid)or you can put the...

I2: the grid

T1: ..here (indicates the horizontal plane bisecting the upper and lower body) and you are in 8 position..go there..or you can be in 5 also and you have to go 9, 8, 7.

11: So this man (Willaim Forsythe) developed like a whole style of moving based on that ...Fred Astaire with the hat stand..

T1: Hand stand?

I1: Hat stand.

T1:Ah yes yes

11: The famous routine where it's like a partner but he's doing ballroom with it. ..so ballroom dance?

I2: Ball room.

T1:Ball room?..ah yes yes.

11: Yes so the style is ballroom but with a hat stand. Things like that so he can use that for modelling.

I2: We feel like that there can be some research on his part to see..

T1: But I'm not really equipped for that..

I2: Then you're going to have to do some research.

T1: Yeah yeah it's really interesting.

I2: Or ask someone you know who dances.

T1: What?

I2: You can ask someone as well.

T1: Yes for sure I am interested in that.

11: Because it's taking your scientific ...your very scientific mathematical mind which is with the grid here and the 3 dimensional grid well there's actually dance based on that with William Forsythe...there's an interactive CD that he made.

I2: I have that ... if I find it...

11:It's really interesting the interactive CD ... there are like virtual landscapes that are in the space like say that there's a table here for you and you sit on the table you slide on the table no one can see the table you're underneath the table it's a real table with dimensions and ...the juggler knows that ...or there's a thin passageway here and they're really squeezing themselves along and that sort of thing...

I2: I guess to go back to decision training...

I1: sorry

[00:30:37.061]

I2: It would be the modelling but the modelling that would not be about diabolo juggling but modelling about dancing to show him different types of dancing

T1:(continues writing notes in his book) ..to show on video?

I2: Or go and see shows...Marie Chouinard is coming...

I1: Marie Chouinard is very interesting..

I2: Because he says that he's interested in dance we want to know what does he know already about dance. Is it just an intuitive thing or does he have knowledge ...does he have a culture of dance. If he says that he wants he's interested in bringing the dance aspect. We feel he needs to have a culture of dance and find models that will inspire him or provoke changes in his movement ...

11: ...to balance the knowledge he has of diabolo ...all the video he's seen of diabolo. Is there on the other side the same knowledge of dance...is interesting....to see. So there's modelling and the feedback with niveau de jeu suggestions both to look at... [00:32:07.061]

T1: I (will) suggest to him when I go to see a dance show I will suggest him it would be interesting to ...but there's only three months left....

I1: Maybe that CD that Forsythe CD ...that's a modelling tool. The CD that's from William Forsythe he developed a CD for his dancers to work with. It explains everything and it's very interesting.

I2: It's a good tool.

T1: I'm really really interested in that.

I1:Ok I used to have it but it's probably in Australia somewhere.

I2: Ok well we're past our time.

Appendix 1.13 DBT 1.02

Case Study 1 Interviewer: I1, Teacher 1: T1, Student 1: S1

11: so [T1] let's just jump straight into it and if you could just tell me about the rolling? (indicates a movement of the finger - a visual trick suggested by T1 to S1)

T1: The visual trick?

I1: yeah let's go straight into it.

T1: I didn't know if I spoke about that before.

I1: yeah you did ... you mentioned it in the observation...in the session that I observed? T1: ok

I1: yeah ... you said that you had this little tiny trick?

T1: It was for S1 really complicated to put in the beginning for example or in the act because he has all his own stories about each movement.

T1: And yesterday we watched the video of his act and the beginning became really complicated about/ there's a lot of emotion ...so I said to S1 "it's complicated. I liked the first beginning the first version where you discovered the dias and maybe it's a good moment to put the visual trick"...and [S1 said] "yes you're right about the fact that it's too much complicated". When he watched it he agreed with me. And "ok yes".

But after just after watching I said "maybe it's a good time to put this visual trick". Not because I'm (indicates tunnel vision with his hand)...I don't know the name in English...

I1: oh..

NC: When I want something or...?

I1:Not like I demand you to do it like that? Like I'm telling you to do it? But I'm suggesting or?

NC: yes I'm suggesting but I have an idea in my mind.. the idea comes back and comes back and come back

I1:Oh ok so it's not like "I am obsessive about this"?...

[00:03:00.000]

.... it's just a suggestion.

NC: It's not yes ...a little bit (laughter)

T1: ...but...I think it's a good idea because the visual effect is there. We showed this visual effect to the other students and they went "oh that's nice and that's a cool trick." T1: And "ok maybe I have to simplify the beginning." He was agreeing with the fact that it's complicated ...too many emotions and he worked on that so maybe today we are going to see the beginning with the little trick?

11:That'll be very interesting so we're going to see if that happens and that really reflects that he has a very long gestation period for an idea ...any little idea that is introduced there is a long gestation period so....

T1: yeah I think that he spoke about that to me yesterday. For ...as I said ...for each movement he has his little story and even if there's no link between each story it's important for him. If he turns the diab on the floor he has a story "ok it's like the fire and I observe I discover the fire from ... *comment*?"

I1: ... comes out of the diab.

T1: And he's surprised and he is like an animal. He has for every every movement his own story and when we watched the video only in the beginning I said "yes you have many stories many emotions but for us to watch it's complicated there's no link between each". And he told me...

00:05:05.000]...

"yeah I know that and I have to work on that".

T1: ... and too much in the details. And he is at the point that the details ... are not necessary ...more details are not necessary. That's enough ...after that you have to link

connect each detail instead of "ok for this picture it's like I woke up" and for this one "it's like I want to run after an animal". But what is the link between you woke up and

I1:...you're running after an animal.

T1: And that's good because the emotions are there...

I1: yes there's no question about that...

T1: ...he's discovered the fire and he's really in it and yes ...after that I told him " try to take three or four step backward and watch ...look at the effect in general".

I1: I'm interested that you're able like I agree with you that there's three different things that we're interested ... interventions that we're interested in pursuing. One is this long gestation period.

T1: yes

11: One is varying his intensity without falling into an argument about artistic versus technique and the third thing is ...what is the third thing? I've forgotten (laughter).

T1: The gestation, the level of intensity...

I1: Oh and video feedback...

11:... using video feedback in (this creation period). This is something I'm surprised [at] because he says he doesn't want to look at video...in this period and yet you've been able...

T1: yesterday...

I1: yeah to look at the video and he said "I don't want to look at the video" and he said "I don't want to look at the video because then I'll change things." And yet yesterday he looked at the video he agreed and he's going to work on a change. So that to me is a big change in his attitude to video. What happened that he ...agreed?

T1: To accept the...?

I1: Yeah to agree to look at the video?

T1: When you filmed he was interested to watch the video so I don't know maybe ...maybe it's psychological but maybe it's his defense to say " oh no no no...I have my space ...no no no it's too complicated to change that ...no no no I don't want to see the result...I'm in my bubble and ...leave me in my space."

I1: You can't change really change anything if you can't verify it on video. T1:Verify?

11: To verify...Like if you say "the beginning's too complicated" and you don't look at the video he can say " well...it makes sense to me."

T1: yes

11: But when there's a video there he can look at it and go "I actually agree...I can see it now what you're saying." Whereas when he can't see it and he says "no I don't want to look at the video" as you say it's possibly a defense mechanism.

T1: Maybe.

I1: Maybe.

T1: Before ...it's a defense mechanism ... right now but it's the first answer but after that when we speak he's more open minded. And before watching the video about the complexity of the beginning I told him "yeah I think just show us" present his act before watching and I said "yes in the beginning I'm lost there's too many informations emotions it's complicated for me" and he said "yeah I feel that also" and he has started to open his mind.

I1; Right

T1:Before watching. After that by watching he quite agreed with me and in watching he "ok yeah you're right."

I1: So maybe ...of the three interventions in this last two weeks because of the presentations maybe we should stick with the video feedback? Gestation might be affected by the video feedback.

T1: yes

I1: He may react to it quicker but the level of intensity perhaps we should stay away from?

T1: For now yes.

11: So we don't want to destabilize his presentation so if we look at video feedback and he seems to now be open to looking at it during his creation period and it seems to be. What's your thinking of the timing of the video feedback like if you video and then the next class looking at it? If there's a gap of 24 hrs or whatever is it better than right after? Is it too quick for him right after?

T1: Right after? Maybe? He's still in his head and the feeling he had during the act. It was interesting yesterday we watched the video but we didn't know exactly when...what is was?

I1:When it was what day it was ... because I had a code for it.

T1: was the first or the second... "ah yeah you see it was better."

I1:So it was disorienting.

T1: So I think it yeah...the best maybe is to take 2 or 3 videos and to be able to compare each presentationmaybe.

11: Yeah but I had that coded and it was 1.04 which meant that it was the Wednesday of the second week ...no it was coded wrong anyway, so you were looking at one from the Monday before or something like that so it was as you say it was interesting to be not knowing quite which video it was or when it was and you kind of then look at it more objectively maybe with more distance?

T1: Yes yes...because if we want to ... as yesterday we wanted to watched the "neutral" video of the act and we know already [what] we are going to say, what I am going to say about that...so maybe I am not really objective because I want to say something about that...I want to say something and I have this support this support of video "ok you see na na na." So the fact we were on the wrong video "ok so this beginning you (something indistinct)."

I1: Because everyone was lining up for a continuation of the argument perhaps...

T1: I didn't understand you.

11: Perhaps knowing you're about to watch the video you think you're going to watch and the subtext of that video is artistry versus technique...

T1: yes

I1: Everyone's lining up for continuing the argument ...everyone's in their corner whereas it turned out to be the wrong thing it's like "ok let's talk about the beginning." So that's kind of interesting ...it's kind of a random, the random practice.

T1: yes it was! (laughter)

I1: So we need to be open to that and not try and be too linear with it ...more circular because that's how learning is going isn't it? Circular "come back change my mind go forward"?..

T1: ah hah (nodding)

11: ... "I have this opinion, I come back and look at it change my mind, go forward"...so that's the feed forward thing that Patrice talks about?

T1: Feed forward (nods).

11: Feed forward yeah so ...Just when we look at the real video but I'm not going to say, I'll just say, "I think this is the one we're going to watch today...we'll just look at it the

video from the 'neutral' [version of the act]" ... the neutral video. I would stay away from that word "neutral".

T1: Neutral?

I1: I would kind of stay away from that word with S1...

T1: ...(something indistinct)

I1: ...because I think he interprets the word as "taking all my artistry all my personality all my artistry everything that's me out of it and it's just robotic."

T1: So "intensity degrees"?

11: Yeah when we get to it again...or maybe when watching video maybe you could reinterpret it as intensity. When I am talking intensity I am talking about the level of intensity inside you.

T1: ok

11: Just playing with it [00:15:41.593]... you know more like a quiet energy, a really emotional energy, ...you know just playing with the level of energy. Is that what Sylvain was talking about for you?

T1: with Sylvain?

I1: It was the level of intensity?

T1: yes yes

T1: But as we said we don't work on that.

11: No we're not going to work on that ...but when looking at the video he's going to want to know/ well maybe you don't even have to talk about it. ... Is there any point to watch the ["neutral"] video at this point?

T1: We can watch [the "neutral" video] but if we go in this discussion (artistry versus technique) we can't do that for 5 minutes ..it's a long/ and I understand his point of view and it's really interesting and I agree with part of that. This is a long discussion ...a long term [discussion] I think.

I1: So is there any point at looking at the [the "neutral"] video really?

T1: Yeah we can maybe to the frustration he had to separate technique and artistic. I1: Yeah and maybe just maybe just say "we're not looking at this because you're very close to your performance and I don't want to destabilise your performance but you might want to think of it differently when I say neutral I'm not saying take the artistry out I'm talking about the level of intensity"...boom pack that one away and move on. T1: yeah

11: And he's probably not even aware that he's actually watching video in his creation period and that's something he said he didn't want to do. You know I think he's not really aware that he's actually watching video and he's actually changing things. So I think that's good because if he starts to become self conscious about it he's going to go "I don't want to use the video at all." So I guess it's a balance of timing when to check it out. It's probably not an analytical thing but just more like "let's just look at that last one from yesterday or from (indistinct) and compare it with this one you know just to see how the beginning's working or not" so it's not a big imposition on him. Ok that's really interesting.[00:18:45.337]

T1: For the I think also for the gestation?

I1:Gestation problem?

T1: ...problem ...it's every body has his own rhythm and I think his rhythm's slow but once what will make the confidence between him and me or the others and after that when he has the confidence he's more open and more fast. More open to change little things.

I1: You do you think still at the moment he's not totally confident?

T1: Oh there...it's a big discussion about confidence...but the confidence progress little bit by little bit and for one sentence or for one decision (indicates a step back with his hand).

11: yeah so it could go one step forward and two steps back is that what you're saying? T1: So I prefer going little by little...

I1: Little steps...three years.

T1:Yeah three years and I don't want to lie I just want to be myself. But as I feel yeah he has a big bubble and I don't want to go in the bubble (makes a crashing sound) "ok now we are going to do that that that and try that try that and go go go ...no you have to put that in your presentation and you don't have the choice"After that he's only a robot and he do all (mimes "the same traditional tricks").

11:I think there's many things you know that he doesn't know as well like in the area of biomechanics and proprioception and a different way of thinking about how to visualise skills. Do you feel that he responds or is interested in that side of your teaching?

T1: About proprioception we spoke about that. He knows my past, part of my past, about the movement analysis.

I1:Which is so important for juggling I mean it's so key.

T1:Yes and for the movement also because he want to put a lot of dance as he said at the beginning of the year. A lot of dance a lot acrobatics er not a lot but some acrobatic stuff linked with the juggling.

11:I just remembered our fourth intervention...we can't have any more there's so many. The fourth that we were talking about was this visualisation tool of space like using the interactive CD of the William Forsythe CD to get him to explore his movement differently and to also research different dance. So that again is something we need to look at over the next session and this session just as you say the confidence the breaking the bubble and just looking at the video and not getting, not thinking the video is going to destroy his integrity or anything like that and he's going to start doing things from the outside but just to help him form his process. ...and then going from there into then tackling gestation, tackling the intensity, broadening out his concept of movement. So in terms decision training it's like video feedback, it's like modeling with the dance and stuff and the interactive things and with the slightly more random things with him psychologically his first answer is always going to "no" I don't want to do that." T1: His first answer?

I1: To any change I think his first answer is "no" to resist change.

T1: Because you try to enter into the bubble.

11: Cos yeah random practice breaks that I think. I think your strategy of using random practice I think breaks that because it comes from the side. He doesn't have time to react in the normal way like the thing you did with that (indicates the visual trick) it was in a random situation watching a video he didn't know where it was from and stuff and you just stuck it in.

T1: Oh ok I understand.

I1:So psychologically I think the random practice as well is something to bring to it...so it's complicated.[00:24:23.245]

T1:yeah really interesting....

I1: ...ok anything you'd like to add in there?

T1: No I learned a lot through this relationship. Through every relationship with students teachers but the fact I have to watch myself and S1 and the relation I have between the teacher I observe - me- and the student i observe. And to put words also on all of that ...it's really stimulating for me.

11:It's great for us too because it's a complex situation and it's a lot more complicated than some of the other students and so the strategies need to be more sophisticated and maybe a multiplicity?

T1: yes

11: ...that interconnect rather than just (indicates putting something in one place separate to another)...so it's very interesting though. The video feedback I think is the first breakthrough in terms of piercing the bubble I think for sure and maybe if that's going to have an impact on gestation. We'll see if he this (does the visual trick) today. T1:I have to work on that.

I1:We can't force it though.

T1: I think I am more and more confident from him. I have a lot of confidence in him...and we'll feel that I think. And it's a really good relationship and we start from there...there's no problem to integrate the tricks to change his way to do just for an exercise. He's really open mind...

I1:For an exercise.

T1:Very...yeah.

11: The next step is to see it come back in his work. The next step is to see it not just get absorbed into the exercise and into his program file and stored away. T1:Ok

11:... But if it can come back "just try it out in front of people and throw it out if you want to but you know if people don't get to see it you won't get any feedback..." so that's all interesting. So we agree that the strategy with the video today is just going to be watching it, explaining that very briefly you didn't mean taking the artistry out. T1:Yeah I didn't use the right term.

I1:But it's more about the level of intensity just to play to around what effect it has on your movement when the internal intensity is...

T1: Lower.

11: Played with ...moved around maybe. Maybe "lower" maybe might be negative...avoid anything that could be remotely negative...like "lower" he might think "well that's no energy well" (does no energy gesture). He's going to take an extreme reaction to anything. So we have to be very careful but not to get into that argument (artistry v technique) because that especially before a before a performance ah might not be...

T1: Maybe by watching also ...different act some diabolos act from Cirque du Soleil or from Cirque de Demain which are really technical and "ding" (does a traditional complement gesture) yayayaya "ding" maybe...

I1:I think he really knows that and he doesn't want to even look at it so...

T1: He wants to be really far from that.

I1: Very far from that.

T1: He told me "I dont want to have a very high technical level act."

I1: Which is interesting coming from him because he could easily it's the easy option for him ...he's doing the hard option which we have to keep remembering.

T1: That's why he suggest me to do a manipulation act for the presentation instead of doing/ because we worked on sequences without diabolo with stick with stick and diabs, one diab, two diabs stick etc and the easiest way is to put all together and find the links and "ok you have an act" a perfect summary from what we worked on during the session but for him it was real challenge only manipulation.

I1:Another thing ... if you get pressure from the school about it ... another thing is to document the process over the session like we have documented it but you document all

the things you've practiced and just edit and then if anyone says "all I see is someone picking up diabolos and dropping them." ... you can say "well this is also what he does." T1: yes yes

I1: But that's the easy thing... to put on this is the area that he is experimenting in and learning.

T1: Because it's not his comfortable area. It's hard for a juggler...how can we compare? "do an act for aerial hoops without hoops."

11: This is why I think [the] presentation should have two elements one is a technical – "this is all the techniques we did" and the person just does them and then "his is what we are combining artistry and technical with ..this is what we are experimenting on"...It's a separate thing not one or the other. So you get the full picture of what the person's being doing you know because you can't judge it just on this (indicates the act) because he does all this other stuff as well.

T1: Yes but I spoke with [head of school] after I, remember during the interview? I wanted to go to see [head of school]? And the day after maybe I spoke with her and she is aware and totally open mind on that. She find that a little bit curious "ok only manipulation ok?" And I told her "I want to tell you about S1 about the presentation, we only present a little part of what we worked on and don't be surprised it will be manipulation without stick not classical diabolo so don't expect to see a big technique with a..."

... "oh yeah that's curious yeah for us it's coherent we think about the epreuve synthese and he needs to test material on stage about manipulation."

I1:Well I think that's really good to that because people have to know.

T1:[00:32:54.084] for me for ...because we have a big pressure and everybody here wants to do the best we can but we have pressure for that...that's goodwe're going to see after the presentation.

11: yeah well I'll be there filming (laughter...T1 makes a grimace and mimes freaking out.)...ok I'm going to call it there. I bet it's over 12h30 your interviews always go longer ...oh 12h36 well done that's really good.

T1: Nice nice

Appendix 1.14 DBT 1.03

Feb 14th 2012 Case Study 1, Interviewer: I2, Interviewer: I1, Teacher 1: T1, Student 1: S1

I2: It's just we saw S1 yesterday we talked a little bit about how he felt and ...I'm not going to say everything he said because it's not really relevant but there's one thing I felt you should know so you could plan better is that...I'm not sure he understands...let me start again...it's the improvisation exercise that you did.

T1: find (something indistinct)...

I2: yeah ... clearly S1 doesn't understand why you are doing that.

T1: I don't know if he doesn't understand or he doesn't want to understand.

I2: Could be...but there's a part of himwhich is not understanding or not wanting to understand. From his point of view it's the same thing.

T1:yes but there's an implication to have...and you can choose to understand or not to understand and for him ...I think he chooses to not understand.

I2: Because?

T1: We spoke about that and we had a big discussion with him not this Friday but the Friday before. He went to me and said "I want to speak to you. It's (been) one week that I want(ed) to speak to you. I want to explain ...ah not to explain...but to speak about a

few points."...ok I sat down and I listen(ed) to him and he gave me a lot of things about the class, about his position in the school, about his personal life. It was a big, not a transition, but remise en question (questioning everything) for him in all his life, not only in the school but after that when you are like that you, .sauver des points...in every part of your life.

I1: sauver des points is ... he's questioning?

I2: Raise questions about many aspects of his life.

I1:ok

T1:My teaching, the fact that I wasn't a diabolist, the fact that I wasn't an artist. He wants more autonomy.

I1: So we don't have to tell you everything because he did it (already)...

I2: No ok go on.

T1:about his personal life...all.

I2:So how do you...when he says all that to you what do you do?

T1: I listen carefully to him and after that "ok...ok...I understand what you say. Now I can't change some things. Like I can't become a diabolist now. For your personal life I can't do anything. I can give you more autonomy" ...and I told him I would make my reflections during the weekend and "I will speak to you next week." And I had a big reflection because I didn't understand. Everything was really honest and good with him and the relationship between us is so nice and yeah I observed that the week before during the improvisation in the movement. I didn't feel his implication. He did the exercise to do the exercise but....He told me about this exercise precisely. "Ok I already did that and I don't have anything to learn in that....You're not a dance teacher and I don't have anything to learn..." I was a little bit disappointed not for myself because ... "if you want to judge me like that...I don't care" ... but I was disappointed [about] the attitude "I don't have anything...I did already that." But for each exercise you can improve your level. It's from you, you can suggest, you can push you[rself] at a higher level. So it's your job. If you don't want to be in...

I2: a learning situation.

T1: yeah ... and there [were] a lot of points ...in one hour it was ...chargé (loaded) ...about the relation with [other student in class] for example. So he told me a lot of different points and I didn't understand the relation between the different points. I think it's a period for him...he's questioning a lot and he put all the points in same bag and ok everything goes in the one way and that's it. Because with [other student in class] for example he told me "yeah he's a beginner and he doesn't have an inspiration from the other student because it's [other student in class]." But you can nourir ...tu peut nourir (you can be nourished) from other people ...other jugglers. He's a really a good friend of Jimmy ...he can spend time with [another juggler], with [another juggler]. You can learn from (them). I told him "if you learn 5% of one teacher or 1% for you that's good you are at high level already so after that you can't learn 100% from one person. Take just a few % from each one and go."

I2:It's true the more advanced you are the less progress. The progressive curve. I1:I was just saying with this exercise that you've developed and going into next week with the energy ball. How do you think you might describe this to him in way that he ...takes it more seriously. You know...given that you want to do this exercise.

T1: yeah at first I thought I explained well the exercise because it's for them and not for me and I told S1 "there's a lack of...there's a big difference between your body and the object. There's a wall, there's a rupture...and we have to work on that." And he told me "yeah but I already worked on that and so on."

I2: He already worked on that in the past?

NG; yes

I2: So he does not feel that he needs to work on that again.

T1:no

I2:but you feel there's still a wall.

T1:And we saw that in the video.

I2: When you say "we saw that" you and who?

T1: No no no, during the discussion not for now. After that ...last week we saw the video.

I2: "We" is who?

T1: S1, [other student in class], I1, me. And we saw the video of the Wednesday before. Especially when they have an object for example. When they have an object and the movement has to go from the stomach and they paralyse their arm. So it was really interesting because there's no energy. All the body was really nice but with the object (indicates a dead arm) it was paralysed. It was really clear, and we spent 10 mins to look at that and say "look here your arm is like this." When the energy is in elbow the same. The object is still paralysed, fixed. They move like this (indicates a fixed bent arm position moving only from the shoulder) instead of going (indicates the energy moving along his arm fluidly) until the object and that was the exercise.

I2: So he knows that you want to work on the connection...

T1:...between body and object.

I2: And you feel that he does not want to work on that. Or I'm feeling like maybe it's too much challenge for him.

T1: Maybe....maybe

I2: We don't know.

T1: But maybe he's just....that's why I didn't speak last week with him. I just let the thing go down and now we speak "oh ok how are you?" It's correct. Friday I asked him "ok (how) was it for the autonomy?" The other thing (personal life) I can't change anything but for the autonomy i respect that you need time to repeat to repeat and that's correct.

In fact in juggling they have no time to repeat after the school because they have class, academic class in the evening. So he needs time to repeat and ok... And he complained that I give him too much ...feedback.

I2:But it seems that at the last session he said "i need more feedback." Did he say something like that?

T1:More feedback?

I1:You mean last session.

I2:the end of the session.

I1:When he was coming up to his presentation. You know in December?

T1: uh huh

I1:He was asking you for more feedback at that point. Now he wants...

T1: He is in a bad dream....he needs to repeat and just...

I2:So it's not the right time to give feedback?

T1:No. But if it's honest because I appreciate. I thanked him to come to tell me. He was really honest even if sometimes it was little bit maladroit (clumsily done) ...ah? I2: Clumsy

T1:Because he mixed mélanger every point. But I can understand. This period of the year is difficult for everyone. So after that when I had my reflection I saw "ok there's too many points there's no relation between each point. Maybe he's sent pas bien (he's not feeling good) in general ...it's normal and I spoke with [another student] his colocateur (room mate). Colocateur?

I2: Room mate.

T1: Room mate oui...and he asked me "how is it going with S1 because he's strange at home... it's not only..."

11: I was just getting back to just how you are planning to proceed with the next improvisation given that there's some resistance how are you going to describe to him the next improvisation?

T1: We are going to do the...what eprévu est-ce qu'on a prévu what we planned but just shorter ...because...I agree with that the first meeting on the seventh floor was really long because we explained a lot, we had feedback and we tried...but if si c'était possible...

I1: was possible.

T1: oui...I'd like to do 10 minutes each day but in the studio we haven't any space we haven't the music...I can't impose the music on the classes.

I2: We do that. Artistic councillors.

T1: Yeah but for improvisation like that it's difficult with other people ...I don't know. I1:But isn't that hard first?

I2:I think you should feel comfortable doing that ...

T1:oh yeah?

I2: Because it's part of your class. If you were doing an enchainement you would put the music on. Now you're working on music but specifically to an enchainement I think you should.

11:Also it's a good hard first exercise for them to improvise in that situation. You have to sometimes warm up on stage with lots of things going on and doing your own thing..they need that.

12: He needs to focus on what he's doing and not the outside. Me I want to knowthe difficulties you have with S1 now. How much is it because of the research? Because you are trying to do different things because of the research and...so you're exploring. And he knows that we're doing a research ...Do you have a feeling of ...how the research affects your relationship with him as a teacher student.

T1:The relationship I don't know.

I2:But the relationship I mean the professional relation not the friend relationship but the professional relation.

T1: The way I teach. It changed the way I teach. As you said I try I take some risk I suggest ... and he knows that I try to answer to the goal of the research and for him also he can affect his son état d'étudiant (state as a student)..

I2: State of mind as student....How so.. can you tell me?

T1: ...For him or for me?

I2:I was thinking of him but maybe for you also.

T1:For me ...I think it's really interesting to study ...and I want to give my best ...I don't want to just be comfortable in my teaching.

I2:So you want to do things differently and explore?

T1:yeah yeah take some risk, test.

I2: And his relationship with you. How does that affect your relation with him? T1: ah because it is a way of teaching I am not comfortable in so I think he feels that. He feels I am not comfortable with some points and maybe the confidence may go down.

I2: Confidence in?

T1: In me.

I2:In you? Or in the exercise.
T1:In me and in the exercise. When you suggest an exercise. For the same exercise if you suggest with a lot of confidence "yeah yeah you have to that and do that." ...and "maybe you can do that or do that."He feels the difference.

I2:So that affects like you say his state of mind.

T1: Yeah but that's correct. I'm not uncomfortable with that.

I2: Anything else comes to mind?

T1: No as I said I was a little bit disappointed, sad, because it's not a good feeling for him ...and maybe it's a period, a difficult period for him. A lot of points not only my teaching. And it affects the dynamic in the class ...but I'm sure it's for a short term and. ...because he didn't change anything in the plan we did until (he means from) the

beginning of the session in January.

I2: It did not change?

T1:No.

I2:The plan?

T1: "ok give me some autonomy, give me, stop giving me feedback" but he kept the same, as we said 60% technique and 40% manipulation of diabolo.

I1:That's the sort of negotiated thing?

I2: No

I1:No

T1: No he just kept that. I didn't ask him "ok keep this plan." He kept the plan by himself because at the beginning of the session we planned together ...yes...even if I want more technique in the class.

I2:You want more technique in the class?

NG; uh hmm. 3 diabs 4 diabs. And he agreed with that.

I2: ok but so there is more technique.

T1: yeah

I1:Do you think that he has agreed with it because he is complying with the objectives of the school?

T1:C'est quoi complying?

I2:Complying est qu'il le fait pour adhèrer des atteintes de l'école ou.....

T1: I don't think so. He agreed with that "ok I need my 4 diabs stable" and we spoke about the technical level in the schoolbut I don't think that I told him "ok you have to do that, you have do that." I suggested (it) to him.

I1: And also he would be reflecting on last year's presentation. He would be thinking about the reaction and his meeting with Daniela and his meeting with you. So maybe there's some pressure?

T1:yeah even if he told me "yeah I know Daniela told me that and nah nah nah but I want to...."

I2: Stick to his plan.

T1:Yeah but when he told (me) "no I keep my plan" he alwayslike last year it was really difficult to include the 4 diabs in the (act) "no no I don't want to that, I don't want to do that, it's not coherent. I just want to manipulate my diab without stick" and one week two weeks after he agreed...for one element "no no no I don't feel that I can't. All is clear for me. I don't want to add that just one week before." .He added it, he did it. I2: So he's flexible.

T1:yeah there's always a first decision... "no I don't want" and then (indicates a passing of time) he changes.

I2: And that is something that is recurrent...this pattern of saying no and then?

T1: yes..that's why the discussion was really interesting. I liked the honesty but "ok let one week go."

I2: That becomes your strategy.

T1:yeah instead of (indicates two people going head to head) "no you have to do that, and do that. ok. you think that but I think that. We try to go in the same way together. I'm not here for myself. I'm here for you and..."

I2: ok cool

I1:ok so I'll be there Thursday again to....Are you going to do these every session now? T1: Session?

I1: Every class are you going to do the improv for 10 minutes?

T1:For now I just keep the Thursday.

I1:So you're thinking maybe next session you might start more frequent?

T1:I don't know maybe sometimes just "ok today's Monday."

I1: yeah ok random...keep it random.

T1:5 10 minutes.

I1:Maybe random also with the other elements like maybe the music or what? You know you're going to be random with when you're going to do it which is interesting. Are you going to be random with the length of the improvisation too?

T1:No I want to keep 5 or 10. La longeur?

I1: No I mean are you change the music every two minutes?

T1:Ah ok ...maybe one song of 5 or 6 minutes. I don't know.

I1:So there maybe elements a bit more random is that the plan?

T1:oui...I try to feel it. I don't want to plan too early. I like to feel the energy in the class, when I come and "ok."

11:and just one last thing...do you think with the elements that you give in the instructions like you had where the movement comes from and the body part, you also had colours and other elements.

T1:yes other emotion.

I1:emotion...with the energy ball what will be the instruction for Thursday?

T1: To move the energy ball from the object. If you receive it, if you catch the object, the energy ball [will] go through the body into the ground and after that come back to the object and throw again.

I1: And that will be the only instruction?

T1:(nods) yeah for now I prefer ..because I don't want their reflexion.

I2: Thinking too much.

T1: Thinking too much ...and it's a good balance also between [other student in class] and S1.I don't have (means "want") to forget [other student in class].

I2:ok merci.

I1:thank you.

Appendix 1.15 DBT 2.01

Nov 17th 2011 Case Study 2, Interviewer: I1, Teacher 2: T2, Student 2: S2 I1: This is the first week where we are all clear to collect actual data and …because we got held up it's been quite frustrating for me because I notice one strategy that immediately …that changed a lot from a month ago was you were using a lot a lot of questioning

T2: yeah

I1:like really a lot and I now notice that you are hardly using any questioning and..

T2: because you told me "try to withdraw it."

I1:oh yes yes oh this is recent then you did it?

T2: that's the reason I didn't. (use questioning)

I1: ah ok ok

T2: You said "we are planning of doing that to see how they react so that's why I reduced it."

I1:ok so the question for me is in the month well when we were waiting for ethics clearance and everything were you using the questioning techniques a lot?

T2: ya...I mix it and yesterday at one point I had to ask a question because I mean at one point...and the hard thing is that we have to mention it's a non written

law...decision training doesn't mention it but in other areas they mention it ..every time when safety is involvedyou have no choice ...I said you have to do that to explain to make sure it's clear because it could go wrong and then you have no choice it's like direct teaching...

I1: yes it's a security issue

T2: if it's not a safety issue then...

I1: yeah well I did notice immediately...that's good...because I did notice immediately he switched very fast to giving you the answers and I was just wondering what your observations were about that ...what was your thoughts about that? I mean he was very/ I mean if you had been doing the rapid questioning right up to the end of last week?

T2: uh mmm

I1: and then you switched this week like on Monday?

T2: ya!

I1:ya ok....then that was very fast ...I mean for me I thought you'd spent a month withdrawing the questioning.

T2: No

I1: and it was just like immediate

T2: No because ..

I1: wow

T2: I don't do questions all the time but I do it everyday so they're used it..

I1:yes

T2: so they can and S2 is really good at that because he learned himself, he likes to have an extra point of view but he likes to know how he feels and how he does it. I said "you're fine you know what to do" and I kept saying like "remember the eyes" because he understands now where to look ...I don't say when now I just say (indicates two fingers to his eyes) this. If it's when then I'll tell him because then it becomes to me a safety thing so "you have to look at one point there, at one point there." Then I just tell him ..that's not a question. Sometime I will say "where do you have to look?" ...once he knows what to do.

I1: I mean it's early days you've only had like two sessions where you've withdrawn the questioning quite a bit? Yes?

T2: Actually yeah...Monday and Wednesday.

11: On Monday and Wednesday ...did you notice ...yet whether it's affected how he approaches the ?...

T2: The result is not the same.

I1:The result is not the same ...ok so...

T2: ya

I1:ya

T2: ...because when you question you aim your question at the answer you are looking for ... and now you know where to look, what to think, what part of the skill. If I don't question him and say "what's wrong?" unless someone has lots of experience knows exactly then you don't even have to say anything they just say right up front "I did that wrong"...and he did once in a while (say) "I did this and this and this wrong."

I1: So we're observing what Vickers was saying will happen is they'll be a dip in the successbut the type of learning is different as well but there's a dip in the success.T2: Ya because they're trying to figure out what to do. They don't know where to look. When you're questioning you guide them.

I1: So I think we're in an area of like broadband (I1 means bandwidth) feedback where if it's a security issue outside the target area then you're going to say something and ...also when he's a long way off target you're going to say something.T2: I have to.

11: You have to ya. So we're in this area here where he's trying to work out trying to find it. Now the question I'll be asking him is what does this? what did the last two sessions feel like? did you notice a difference? did you notice something different? you know ...did you notice? I'm not going to prompt too much...I want to see if he says "oh yeah he was asking so many questions...or the questions were different." I want to see if he has a sense of that or whether he feels ah more empowered I don't know...I want to just see what he says because as you say ah yesterday I observed he was really like ...ah really engaged in the process...he was really kind of having a good day as well but not necessarily hitting the targets as frequently as I saw a month ago. T2: uh hah va

I1: So that's kind of an interesting um/ whereas a month ago I would say he was ...you know how there's this ...place between anxiety and relaxation?

Like there's this optimum ...this optimum area and I think students coming in the first few weeks are obviously they're a little bit stressed ...they're a little bit anxious ...they are making a new rapport with you, they want to do well...they don't know yet what the rapport is going to be...and I would say they are more towards the anxious than the relaxed state...so I suppose a month ago I saw in him a more/because there was the injury as well so there was a little bit of that/

T2: But to me it depends on the skills he's working on ...there are skills he doesn't feel comfortable with then his stress levels go up.

I1: yes

T2: Like on Monday for instance ...that trick that he's got mental problems with it in the sense that he's scared of it.

I1: Which is the...?

T2: Double lay out.

I1: Double lay out yes he talks about this.

T2: He doesn't feel comfortable because he doesn't control as well that's why..I say "ok we'll do it once."

I1: Right

T2: It's just that it's nice to keep working on it because he was really stressed so I felt if he's really stressed that's time for injuries so I said "how about we do it once, i'll call it when you have to look down"...because there was this one time when he landed short last week...because he has such good spatial orientation I didn't say anything and he didn't react. So I said "now I'll tell you when to say 'now' to make it safe." And he did it good so ...and next class we'll do it again. I didn't yesterday because to me his ankle was still still so so, so I said fine I won't touch that skill.

I1: So that's a kind of a hard first skill that you keep throwing in to ...ah to almost more to trigger a new conceptual thinking of what he can do as well I mean..

T2: It's just that he did like on the powertrack where you travel and he has to learn to produce rotation to and from the vertical and he's getting better at it and the double layout is a hard first skill ...it forces him to do good technique.

I1: Yes

T2: ...and because he's in transition between a bad techique and a good technique he doesn't (have) his internal reference yet how to do it how he feels so it throws him off a bit.

I1: Right ...so I guess his stress levels go up because he knows that if he doesn't do it correctly um ...there's potentially a lot more that can go wrong.

T2: Well he thinks about his health...he had a shoulder injury he's got ankle injuries..he's an acrobat that's his life that's what he likes to do and the thought of "I have to stop for a few weeks"...he doesn't like that feeling.

I1:No he doesn't like it he's not happy about that.

T2: ...and because he's stressed then he has more chance to have injuries ...so we have to find ways to get to that point because he needs that in order to go at the level that he's capable of and he wants to achieve..he's got all the talent for that ...so I have to make sure that i push him out of that comfort zone but i have to bring him back to the comfort zone so he's not too stressed and it's fine so that's why I'm working like that.

I1: So what we've done a little bit is/ and these are based on a month ago ...so we've made.. we've created three scenarios because we're looking at teaching like/ and I was thinking about your comment that if something changes like if the environment changes the student will adapt and I think that's definitely true but I also think that it's a scenario and what's going on with the scenario is as the teacher changes yes the student changes but also as the student changes so does you know a good teacher anyway...

T2: You have to.

11: You do..so it's kind of like a relationship that is going on and in this scenario/ I've sort of /it's very much /my understanding of the scenario is it's very fast learning going on with S2 and that's due to ... your perception of S2 as very talented, a natural athlete. T2: He is.

11: ...natural/ and his drive is quite an ambitious drive. He's come from a very tough place he doesn't want to go back there and his drive is/ and this is an amazing opportunity for him that he never imagined would ever happen to him. It's not like a middle class kid who's mum paid/ mum and dad took him (to classes). T2: "oh that looks like fun".

I1: You know took him and did everything for him so he's you know come from the street and this is like a door, he sees it as a door to another world so there's this scenario which is you know is the scenario that I see, we see and so in that scenario I guess we're saying "OK well what change in the teacher can we make to observe another change you know a change in the student and then that's going to affect a change in the student that's going to feed back to the teacher. Then we'll look at another change.

So I guess we want to work collaboratively with you because you really do use a lot of decision training in what you're doing and it's very fast it's going very fast it's hard to keep up so I was thinking the withdrawal of the questioning was really interesting and there is an immediate change. Is their another decision training tool we could look at that you'd be interested in using more or playing with to see about a change? T2: The one that I haven't used is video.

I1: Video ...I was going to...

T2: I used [2nd student in class] as a modeling in terms of because he's got more experience he's also really talented so sometimes/ I used that yesterday I said " [2nd student in class] could you do that trick?" and as soon as he goes, I say (to S2) "could you watch? you saw that? could you go now."

I1: Yes I saw that.

T2: So well because modeling could be through video or it could be live.

I1: Yes

T2:I mean both are as efficient, video is nice because you go frame by frame and that's fine but he's got a quick eye he's really good so just having modeling there/ and that's what I used yesterday..[2nd student in class] didn't know that but I used [2nd student in class] to do modeling to do tricks that S2 could look (at).

I1: I observed that...so is the area of video modeling something you would like to?/I mean ideally it would be very interesting because you keep talking aboutthe visual thing which I think is his potentially is a little bit his weak spot?

T2: It is actually the weak spot.

11: The weak spot ya...I was wondering ifwe got hold of like a head mounted camera...how safe that is when you are on a trampoline.

T2: It has been done with triple flips so there's no problem because it has been done before.

11: So you know if I got hold of... I keep saying to Patrice but I think I'll just hire one...there's these little/ they're called Go Pro...they're a very small camera they use.. T2: Actually one student last year used it.

I1: Ok

T2: He had one just like that but around his head like that with an elastic and he did tricks with that and then went out there and ...

11: Cool so do you think that using something like that for/ you know you've identified with the weak spot and you'd be interested in looking at video feedback as an area that you know/

T2: Ya to me it's nice to have the outside the inside so if he has got one on his forehead that he could view on a video what he sees and from the outside he has video tape show what it looks like from the outside when you were watching...I think both it's more complete. To me it's like a penny you're watching heads I'm watching tails we haven't seen both sides and it's nice to have both sides the outside and the inside.

I1: Ok so let's for Monday see if I can set that up and we do a head mounted camera and also the external...

T2: That you have with the computer and that's fine.

I1: Ya that's fine you know which/

T2: ...and we could change from the outside ...I like if it's twisting I like to see from the front if it's flipping turning from the side because then you really see the angles and it looks better. From the diagonal you don't see as well in terms of technique.

I1: Ok I also think there's a little bit of/I notice when students watch video that I think initially they engage with it. They engage with the image of themselves, like they're looking at themselves whether they're/ but actually to have a camera that's not looking at them but looking at what they're looking at in the space makes the thing very experiential rather than just "oh there's me not doing it well".

Usually it's quite a negative response..."oh I T2ewed up there." But actually they're looking at what's happening in the space rather. Ok so..

T2: Actually it's safe and it's really really interesting because it goes fast and then when you realise watching it you say "oh my goodness my eyes were not ...I didn't have a specific focus." Because on trampoline usually you have two spots you're looking at ...the end of the trampoline bed here (draws an x on the table) here on take-off. When you are upside down you look at down underneath your feet...the rest you see it but you don't focus on it.

I1:ok

T2: and it has been proven and we can experience that if I took my head fast like that (turns his head) and I see everything I get kind of dizzy, if I am watching you I spin of course i see everything around me but I won't focus on it.

I'm watching you again my focus hasn't change my zoom is fine ..if not "ooh I get dizzy." ..so that's why people when they throw their head like that (demonstrates throwing head back) they lost their visual reference and that's bad...so I say "keep looking on take-off, at the end and down. And then we can say "ok is it what you see?" I1: Then we do the/ ya ..

T2: It's fun because just watching this will help him a lot because he'll say "oh ok". Again I always say "the brain understands". That's not where the problem is ..but there is a click that will happen if he sees it.

I1: ok...is the weak spot his head position or his eye tracking?

T2: Head position ...your eyes are in front of you (demonstrates moving his eyes in all directions) people don't do that usually ..their eyes are in front....and instinctively anybody is trying to see where you're going ...

I1:yes

T2: ..and in acrobatics you have to see where you're coming from before where you're going.

I1:ah right interesting

T2: ...so instinctively I twist (demonstrates turning his head towards the direction of the twist) and that and that's wrong because you're brain has a level, scientifically I didn't check that out but, to me. Like that (shows his head in line with his body) my brain tells me I'm upside down.

I1:...like the receptors in the ears.

T2: Now like that (indicates with his head thrown back) it tells me I'm horizontal so when they throw the head back their brain tells them you're ready to twist because of a specific spot you have to twist and the information is wrong because your body is not there. If you keep your head straight it's like a computer saying "ok you're fine I am going to twist" so it creates problems because of that. So by watching this/ and when he does it right he knows and when he does it wrong it's wrong but he hasn't seen the real effect of it.

I1: Alright well I was just thinking of, you know, this could be interesting and I'm really pleased that you ...it's the area you want to focus on because I was thinking "yeah you know" the thing is we haven't really done a lot with the video and this weak spot with his eyes is kind of a perfect thing. Alright well let's/

T2: The other weak spot to me is just time, is like the feeling of the trampoline bed but for that it's just like bouncing and bouncing and one thing I haven't done with him is what we call swing-time. Swing-time is you keep connecting skills.

I1: Right...swing-time?

T2:Ya it's a terminology we use on trampoline. And if you do lot's of little routines. I1: Ya

T2: You get to feel the bed and your body learns to adapt that you're short or over. It forces you to do it. Again you could explain but you have to feel it so on purpose you are going to say "do this and this and that." And like when they are travelling I said I do more repetitions it forces them to stop travelling ...they will react to that because I said "keep them going." And suddenly they weren't correct so instead of telling them "correct." I'll say it once the next time I'll say "no do three more." And then they'll fix it.

I1: The other area that we're having kind of /making the step from the sport definition of variable practice and random practice to the circus application of those things and that's why we're kind of keeping away from those at the moment and just trying to think/ but I would be interested to know your thoughts on for instance ... you know variable practice is defined as you know variations of same set of biomechanical skills.

T2: uh huh

11: ...and random practice is defined as different biomechanical skills put together and seems to Sylvain and myself that this is going on all the time in the school these two things and ... what/ I mean I would just be interested to know what your perception of variable practice would be in circus you know like particularly I suppose for trampoline. T2: Variable yeah the definition could vary sometimes what I like to do is to try to put them in as many situations different situations as possible.

I1: But isn't that/ is that more random practice?

T2: Random to me is kind of a hazard - you don't know what's going to be next. I1: Right so that's kind of like just calling the shots with you.

T2: Ya variable is to me like more warm up, less warm up, higher, lower, ok you are ready to perform, I want you to do first time because you are going to perform at the end of the year you have a show to do or you have an evaluation or whatever it is ok and or with more stress less stress more preparations ... I mean I vary all the time. I1:right right

T2: Ok and I do these things first and i say "oh" I will change ... I just say on the spot "do that trick or do this or do this one."

I1: While they're bouncing?

T2: ..and sometimes i could do that and sometimes I say

/ you do a trick and suppose you do a double flip which is well for him a double flip he doesn't control it quite yet to connect and he's going to jump and I say "one more". "oh yeah oh oh ok." (mimes S2 caught off guard). ..and he has to react. I1: mm

T2: Ok and I change the order of this or that and it's like really hazard I didn't plan it "ok do that". ...the best tool we use for random on trampoline is called add-in..I don't know if you know about add-in.

I1:Is that where one person does something and the next person adds on to it ...(Sylvain nods in agreement)..ya ok add-in.

T2: Because well you have to memorise but you/ and you finish and you have no idea what you're going to do next and you have to throw something ...but safely..it's particular to trampoline but it's wonderful for that because you have no idea..and often times in tricks I do at the beginning of the class ...I just make it up...

"Ok do that one trick" and what I do is forward backwards sideways twisting all directions ok ah "do this or do that or do that"...and they have to try to do it. So there's a bit of variation like that but it's not in terms of situations that i get ready to be evaluated ok ... I might do that trick a bit lower compared to higher ...and there's one example in Joan Vickers book ...the one about skiing..ya you jump up in the air and they say "one or two time jumps" because this is a safe trick ...it's not dangerous you can call the shots ...oh they have to react.

I1: yes

T2: It's random ah "do that" and "oh oh oh" (mimes a disorientated student) and first they find it hard but it also teaches them to adapt ...

we come back to adaptation so people who have this one path one way of doing things they will be good at that ... as soon as you go outside a bit they're off balance. I1:mm

T2: But if they learn to go "well let's do this and that and that" in different set-ups well they'll be able to do anything it won't bother...every time someone tells me something "oh that bugs me" ... on purpose I'll do it not to annoy them so they learn to deal mentally with that situation. "While the music is playing I can't focus"...ok fine we'll play music then.

I1: So there's quite a lot of kind of cross over then between hard first/ how hard first is defined in sport is ...bringing the competition environment early in the training but it seems to me that in circus ...we need/ these tools you know have come from sport so we're kind of thinking we kind of need to a little bit to redefine

T2: Well to me the hard first for what we're doing for circus artists are bringing the harder skills earlier...

I1:skills yeah

T2: Bring the music right away...if you do a number like basic stuff we don't do with music but...bring the movement right away so instead of doing just your technical skill.."could you start moving because you have to do the choreography there".

I1: mmm

T2: So people will say ..traditionally (something indistinct - ?they say?) no no ...suppose you do handstands.

I1:mm

T2: We do handstands then we'll learn to dance but separate ..."dance..don't do handstand".

I1: mmm

T2: "Do your handstands"...and to me why can't you move at the same time when you are doing handstands because you have to do it anyway..Actually Patrice he might not remember but this is a long time ago he had a conference and he was saying that it takes Cirque du Soleil about 6 years before they take an acrobat transforming into an artist...why? Because they didn't do these things ...all they did was acrobatics and they're pretty darn good at it but as soon as you ask them "try to interpret"...woooo (mimes flustered acrobat)..

...so if they learn to to have character as well, they learn to dance right away ...to me it's all hard first because you bring more different areas for them to focus on doing that technical skill and focus to be able to do this in a character it's hard first so it's different to me..

11: This is really interesting then because that kind of defines up hard first for circus really well and it also firms up for me random because random is really stuff that's not going to happen in performance.

T2: well it might because you never know there's things you didn't expect ...it happens.. I1: Ya ya actually but what I mean is I suppose it's the hazards that might happen...it's the might..it's the question marks so random is preparing people for, say the lights go out..or..

T2: They do.

I1: That's not like choreographed in the sequence..

T2: not (choreographed) at all..

11: Whereas hard first is bringing the stuff they're going to be doing early..with random it's the stuff that might happen... ..getting them to be able to cope with ...

T2: They have to cope with anything.

I1: yeah ok

T2: They have to cope with anything ...react in a split second and if you look at circus...I mean they are so many things..I mean things are more static, some are more dynamic but you have to react so darn quickly ...what do you do? I1:yes

T2: And if you haven't learned ... you haven't been trained to, that you'll be ...what is it...not off-balance but caught-off ..."what do I do what do I do?"... "It never happened to me."...well because we didn't provoke it.

11: Yes so I guess that already shifts away from you know/ cos I mean when it's just bunch of swimmers going up and down a pool with one stroke and you're just changing the angle of the elbow or something it's/ yeah you could look at it in terms of just a biomechanical skill but for circus I think variable and random not so much variable but certainly random changes a bit.

T2: mmm

I1: You know.

T2: There is to me it's really like/ and to me it's important because/ it's proven that kids at a really young age could focus for a few seconds and as you get older and more trained you get like teenagers get 20 minutes and of course at high performance you get more but ...you focus on one thing ...could you focus on five different things at the same time?....but if you didn't train that part you're not good at itso I really believe in that because it's a mistake that people traditionally made... I think - let's focus on having your technique perfect then ...let's bring the character..but it takes them a long time to bring it. If they did the character at the same time ...in hand to hand sometimes you have tempos and I'm trying to teach them "forget the tempo ...change your tempo". So when you have a director who says "could you do it right away like you're moving a dancing movement and could you get into your skill could you do it?" I'm teaching them from day 1 to do that instead of "let's do your tempos (something indistinct)." ...you have to do tempos..but to do tempos that doesn't look a tempo. I1:mmm

T2: and if you learn to do that ...bingo!...at first (mimes flustered acrobat)..."could you..do you have to do like 5 seconds before I go?" ...and like on trampoline I say "get your head in ...go" and they say " well I was off balance!"... "go!" If it's not unsafe ... "go".

Appendix 1.16 DBT 2.02

Dec 5th 2011 Case Study 2, Interviewer: I1, Teacher 2: T2, Student 2: S2 I1: So I guess we could just start again by maybe a more general question like how do you think it's going with S2? ...and start from there. How do you feel over these four weeks?

T2: It's going well. The interesting part to me was when you asked me to withdraw of the questioning. To me it was difficult in a sense that I feel that the bandwidth approach is good but at a specific time and he has to feel and understand the technique of what to do at what point and what to see at what point. And once he knows that he's got the tools to analyse the skill...if he doesn't have all the tools it's hard. So therefore sometimes I felt I had to step in just because I'm concerned about if he doesn't see right properly even though he's a wonderful natural acrobat there's still more potential risk for injuries so once he understands that then he's got such a good air sense that it's more easier.

I1: so already I think we're seeing that in a circus context with bandwidth we need to be careful of the security issues with that technique.

T2: i don't think it's specific to circus because it's acrobatics.

I1:...or acrobatics anything acrobatic.

T2: To me it's more the situation where if the risk of injury is involved this is where the bandwidth approach might be delayed I feel.

So I think it's a wonderful tool but there's a timing for everything.

When the timing's right there's no problem. It forces him to think even more and not just answering the question but try to ask himself what's important and what's not. What's the most important part. Which is good.

11: I think we've kind of discovered that also with some other students where it's not so much a security issue but it's like this student doesn't have the movement vocabulary yet to do / actually the movement vocabulary to draw on to answer the questions. T2: yeah I believe that.

I1:so it's like they need to have some material to go to before that bandwidth could be really used effectively.

T2: If we would compare it's the same process as any skill that you're learning. You go step by step and when you're ready for the next step then you go... So to me it's also a step... so when the connections are in place, when they have this vocabulary, they know what to do and instead of someone saying it's right or wrong for that reason they have to think about it which is good.

11: It's really good that we can see the response. We can also see/ we're looking also at the response of the teachers. And in this case it's a response of the teacher like - "I'm going to slightly adjust the use of bandwidth" and finding out the reasons why and then seeing that we then slightly, not redefine, but we rethink about how bandwidth's used in say an acrobatic situation, or any situation actually. It's not just injury is it? Drawing on material they have to have?

T2: They have to have that. And also I realised, I think you made me realise, that often times I'm using an approach based on his reaction. If I feel if I'm watching his/ whether he says it or the body language that he looks lost. So I feel I have to give him some guidance. It doesn't mean I give all provide all the answers but I have to guide him. And other times I don't say a thing. "This is good you're on the right track."

11:Is that because you're reading a particular body language. You're reading a particular stress level?

T2: Yeah. The thing about (body) language to me is as important as verbal language sometimes more because sometimes people don't express their feelings but you could read it and that's important. For instance if you ask to do a skill which could be hard first. And if they really hesitate to me it means they're not ready.

And they're not ready mentally most of the time. Because it's our job as teachers to make them fit physically and technique to the skill. If mentally they have a blockage then there's a risk for injury. They might understand what to do but they're scared. Then its "wo hold on here" I might do maybe another drill and go around. Same thing for the tools we're using for Decision Training. If they don't respond to what I want... if I see they hesitate. If they hesitate/ if they're searching for the answers it's a different story. I say "fine go ahead tell me." And then I'll react based on/ the question might be on the way they react. To find where I want. Basically I want to guide them to what's important to think of. So I look at them and I say "ok they react like that they understand it's fine I have nothing to say ...good.....go on." If not.

T2: We've done the last practice which was good like he had too much travelling backwards. So I didn't say what was wrong. He knew he would travel but he kept repeating the same mistake. So I had a drill which is an easier drill. And then after that drill he did a better technique and then I moved onto the next one. I didn't say why I did it but he fixed it. But knowing S2 based also what/ I was surprised when you told me last time that he could understand the strategies of what I was doing.

I1: I was going to say that he said to me "when he's introducing the double lay he always does it like this." And I was kind of interested to see that students pick up very quickly on patterns. Not that I'm saying that is always like that. In his mind he thinks you always say "ok we'll just do one." And he knows that's it's going to be maybe three depending on his reactions. But also you sneak it in. You say it quite quietly and you

sort of slip it in sideways and he's aware it's coming but it's going to be like/ so he's aware of that.

T2: Again it's a reaction of his behaviour. He's so talented but even with his talent he doesn't quite control the trampoline as he will do with time. And certain skills will scare you. For him it's double layout. For some other people it's other things. Now the pressure is big and often times if we ease of the pressure they react better. So if I say to you "just do one today." Then it's ok "I'll be scared...I'll do one. I'll get it ...fine." And I say "oh if you're doing better...do you want to do again?" And again if he says "errr." It means "no." Or he says "oh why not. Yeah it's better than I thought ...I can start to feel it now." Fine and sometimes I say ok "we'll do a maximum of four." Again I like to have it goal oriented. If you go for a specific goal you know where you're going. So you say "fine I know I have to focus really hard." Because when it's something hard for you to do you spend so much more energy. You don't need to spend that much energy. But you don't breathe. It's harder for you mentally and emotionally. So then I go by his reaction. His behaviour and then I go/ I have specific numbers in my mind. I don't like to overdo the same trick because I feel that they won't have the same focus even though they're trying and they're training for that.

I like to change often and do specific different things to develop overall motor skills and behaviour and all that stuff and focus. But I ask more or less depending on what he could give.

I1: ok ...it's interesting also when you say you look for the non verbal language because when I talked to S2 about it: "is they're any time when you'd say "no" to " do you want to do the double lay again or do you want to do the double lay?" And he said "that doesn't happen with me...I'm not that sort of person. I don't say no I always say yes." And I was wondering what your reaction to that is. If he's saying yes but his body language is saying no?

T2: I'll go no.

I1: Yeah. And has that happened yet?

T2: Not with S2. Not with S2.

I1:He said "this doesn't happen with me." So that's interesting.

T2:Well basically if I ask him something it's because I feel he could do it. Again it's a judgement call. If he says no it means that I asked him something I asked him to do something he cannot do yet whether it's mental, physical or technical.

Sometimes on purpose we ask something hard just to get a reaction from the student. To see how much I could stress him. How does he react to stress. So there's times I will do it only for that reason but for S2 I didn't.

I1: Why don't you want to do that?

T2: It's not that I didn't want to. It just didn't happen. And he's not in a situation where/ because as I said natural talent is something that/ he has such a good air sense body awareness he feels it. He knows where he is. It's hard to get scared. It's really hard to get scared. The best people are like that because they feel it. And you say "do you want to do the trick?" He looks, thinks ..."ok." For someone who's not as talented they will hesitate more. Then I would ask less.

For him I could ask more. But I won't do a triple flip yet. And he could do it though but I'm not there yet.

I1: So you know that if you ask him to do a triple.

T2: He will do it.

I1:He will do it?

T2: I am sure he will do it.

I1: And he'll give you body language that's "yes I'll do it"...?

T2: Yeah because I believe he's done it off a power track. He feels it. I just don't like the control he shows on trampoline yet. And he doesn't do what I call the lead-up skills that I want for triple flip. I don't want him to do it, I want him to do it successfully.

I1: Just on the point of power track. I asked him the question of "did you do power track before you came to the school?" He actually said "no". He'd never done power track before. Obviously he'd done a lot of travelling...

T2: He did tumbling track. Which is a powerful acrobatic runway.

11: Yeah right. So is it that he's hitting these skills like say triples and things like that on power track. He'll hit those first on power track?

T2: mmm

11:...and so in his mind is it that he says "I've done a triple on poweer track so therefore I'm going to say yes to a triple on trampoline"...?

T2: In terms of air sense it's similar but in terms of feeling it's quite different because it does travel (something indistinct) and what it does before is entirely different. And the way it produces rotation is different. I mean the mechanics is there but the approach is different. On trampoline it goes through the vertical he has to produce rotation. He wasn't used to that. He's getting better at it.

11: But I guess what I'm saying is. Is it that he'll say "yes" if you say, not that you're going to, but if you set a hard first in the next class of triple because he's done it off power track? Do you think he's done it off power track?

T2: yeah if he's done the tricks he can say "yeah I could do the trick." But he knows it enough that it's different.

I1:Yeah but will he say yes based on the fact that he's done it on the power track? T2: I'm not sure. That would be a question for him.

I don't believe he's have to have done it before to say "yes I'l do it."

Because one day I'll ask him something that he hasn't already done on power track. It will happen.

I1: And he's going to say yes.

T2:ya

I1:Because that's the ...

T2: Because he's an acrobat. Acrobats just/ they feel it. And they feel it ...they'll do it. In his mind it can't go wrong. Although you know he crashed and got injured at one point. But he feels the stuff. So for him it's / he could be nervous about it.

Not being sure of the end result but there's also the thrill of doing something hard. And because he feels well in his mind there's no reason why he couldn't do it therefore he's going to do it.

I1: That makes it a very for you a very precise thing which hard-first you bring in because this acrobat is just going to do it.

T2: Yeah to me there's no difference between S2 and somebody else that has less talent. Their process will be the same. The difference is the hard first skill will be different. I'll do more progressions with someone with less talent. I'll do more repetitions before

moving to the next step. With S2 I could go faster but still he doesn't do the full control yet. But it's getting better. I mean for that you don't teach. He has to feel it.

11: And for/ because this interview is post the introduction of the camera so the last interview was before that. So for the use of the camera. You feel this is going to help with his problem of looking where he's going.

T2: Because I've never used it. We have used it once to me it's not like/ but we talked about it in the sense that if we could set up/ that we could in slow motion and we could identify and ask him using the same process... "what's your comments on what you see

there?" ok and "where should you look?" So he could refer to it because he knows the technique where your head should be straight. But it goes quite fast so it's good to go to see in slow motion but also regular speed and your eyes cannot focus at everything at the same time. So even though you have al lot of things in front of you. You should focus at two different spots and no more. So your focus is clear in your mind. So if it helps him to that I think it's nice to have. To me it's a mirror to your training where it's nice to visualise watching yourself doing something so you have two sides of the coin. In the theory I believe it's going to help but I can't prove it at this point in time. I1: So in the next ... we could do some more work with it on Wednesday but also in the

next cycle the use of the camera specifically like slowed down and also would it be interesting to place it on a model of someone that does it. Is there anyone in the school that really does it you know.

T2: In terms of visual [2nd student in class] could possibly.

I1: And that would be interesting because he's also in the class so it would be an interesting use because you're using him for modeling anyway...

T2: yeah

I1: ...but to use him where he's looking from the camera point to view I think that could be interesting could it?

T2:yeah because [2nd student in class] does have a good / his focus is at the right place at the right time. He's got other weaknesses to work on but in terms of the eyes...

I1:...the visual reference?

T2...it's good. So it would be nice for him like he watches from the outside and just to see to compare both it would be nice to do the same trick to see if they see the same thing.

I1: Ok so one would be. What do you mean both viewpoints? So like one when the camera's on S2 and one when the camera's on [2nd student in class] and put them together.

T2: And try them side by side to see if they see the same thing.

I1: I'm going to try and get that to happen. Maybe not for tomorrow but for the next cycle I think that's a good way to go forward.

T2: yeah ...Just to make an experiment to see how it goes.We'll see after. I never did it. I1:No so this would be great.

T2: ya to see "ok". It'll be nice for [2nd student in class] to say "ok this is what you see." Because sometimes they say "well I see fast" and yeah it's fast.

I1: So if we do use [2nd student in class]/ you know use some of the footage I probably need to sign him in on the ethics side of it because we'll be using some of the data from camera so I need to just check that with Patrice and everything. But I think it could happen. I think it's a really good way of going.

T2: In terms of research I think it could be interesting.

I1: yeah it could be really interesting I think. So good. Is there anything else you want to talk about at this point? Any questions at all about the whole process so far?

T2: What we mentioned last time in what we could set up in the next cycle. Try to make it productive because you just have two hours that using the technology but not too much that it slows down the momentum that's all.

I1: Well I've thought of a few little changes we could make to the camera. Where we make another hole here. So when it's on his head we just be the lead directly into it while it's on his head into the camera.

T2: ...and then you could see it right away.

I1: and then you could see it right away. Rather than taking the camera out and everything which slows things up. So just these little things to make the thing faster. T2: And also use that one not for every skill. I want to use it for mainly for twisting double flips because this is where it's so important for. Just double flips it's fairly easy standard. But when you're twisting it's critical so this is why it could be interesting to see "ok let's see what you could really see with the camera."

I1: I'm not suggesting we use like as you say all the time but sometimes for specific things to see how effective it can be.

yeah ok thank you very much.

Appendix 1.17 DBT 2.03

Case Study 2, Interviewer: I2, Interviewer: I1, Teacher 2: T2, Student 2: S2 T2: If we take teeterboard – Korean teeterboard – two people jumping you have to look at when the person is coming down so you have a good idea visually – if it gives you information about if the person is high is the person in control. If the person is at a good height and in control you expect a good push so I already have some information then during the actual push what you feel is more important then the visual because it is so much quicker so then you feel the exact push then you already know up in the air if the push is good you know on take off. As soon as you leave the board your brain already knows that it's going to be fine. If the skill is not fine because the person wasn't in control in front or my own actions were not optimum then up in the air I have other decisions to make but right now at the beginning what I feel is important.

I2: so the cognitive skill would be perceptual ? Your partner lands you push you create the rotation but it turns out that it's not a good push but you're in rotation anyway because you've placed yourself to have a rotation so can you change from a double to single?

T2: Once you take off you're in trouble it's all in the take off ...if it's minor you could adjust not from a single to a double flip or a double for a single it's too big a change. You are going to get hurt you can't do that . You could adjust a bit . What happens is when you read your partners actions and then you feel his push will not be as good you'll create more rotation because you knew the push is not as big. You still could do two but when you start your action before you start pushing you already have to decide you are going to create more rotation. While on the board you have to create more rotation. You could do a double flip lower and you could do a double flip higher we train that and this is where we look at the tools to train that so when they get there they say ok I'm lower but I can still do my double flip but I have to produce more rotation . I2: So the plan is not to change a double to single but it is to do the double flip differently

T2: exactly.

I2: Can you give me an example of how differently you could do a double flip ? T2: Suppose you're in a pike position legs straight you could do it tuck instead of pike because you feel you wont have enough height then you say well if I go in tuck position I need less rotation so then I'll be safe I could do that. (Stretched out) it takes more rotation then I could just tuck it makes it smaller then I'm safe.

I2: If we go back to decision training tools how would you train the perceptive skill and the decision making skill ?

T2: When you learn the first skill on teeterboard is the practice to read the partners action so they just don't wait for their partner to hit the board they practice to try to make a connection between what they see and the result and by doing so they focus on that eventually there good at having the right information. So they look and see that the person is about that high so I am going to have about that much push or he is a bit in

front or bit in the back or at the side and they have to read that then they know what to expect after experiencing it.

SL; So just through experience making the link between what they see (the push). If we go back to decision training tools?

T2: Random....because it's so quick you have to make quick calls . Random is really important because random is you don't know ahead of time ...you improvise a little bit so they have to react really quickly. With random I train people to react fast and that's everything to do with acrobatics and circus it's a key element .

I2: Could we say ... because its already random I guess because every jump is inherently random...

T2: yeah it is

I2: but if you want to provoke more random could you ask one of the students for example could you ask him vary your heights ?

T2: To me I place this in variables in the way that we do train to go lower and higher . We go from standing, you stand on it (to do it) to produce more rotation with less height we do that...Another thing I train them to do which is part of variable but is also random is , suppose they bounce on trampoline because you have to be good on trampoline to be good on teeterboard, when they are not in control I am asking them to take off anyway they learn to adapt. They are off balance they have to decide if it is dangerous then they wont do it , they feel they cant push then you don't do it , but if I could push and I know that I don't have the optimum push do it anyway . That 's what I tell them to do they learn that's part of random to me. Because you say I'm off balance what's going to happen ? Learn it . At first of course you do things a bit easier safer but their brains learn to analyze and adapt and judge that's really important too . I don't need them to have the perfect jump before going. I go you go on the fifth jump I2: on the fifth jump no matter what ?

T2: except on teeterboard same thing on the third jump go . I'm not ready. Go. That's what I tell them to do. So they learn the random and variable to put them in different situations.

12: Because you never know if the third jump is going to be optimum. Because they have to deal with what ever the third jump is.

T2: But you train that on purpose...if there is a musical cue there do it there and at first you do things that are not really difficult where you learn to adapt. As you get better you have better judgement then you could do something harder.

I like also the hard first cos the hard first they are out of their comfort zone ...they have to go for a double flip ...they push is not optimum so they are out of the comfort zone so suddenly they realize maybe I could adapt even though its hard . The hard first will help you go through that situation as well.

I2: Give me an example of hard first?

T2: Well hard first is a skill they are not ready to do ...like you're not quite ready to do a double flip with a twist yet but you did progressions and I say ok I think its safe to do it wont be perfect so I do all the progression and I say lets do it once or twice so you get the feel of the skill so my job and my responsibility is to ensure that he's going to be safe no matter what . I 've got to see that his judgement is right his reaction time is right he does the right actions when he is out of his comfort zone or he is in trouble I2: what's the difference between hard first and the first attempt of a new skill, like lets say you've never done a double with a twist at some point youre going to have to do it for the first time ... is that hard first ?

T2: It could be the same but I think there's a small difference – when you do a skill you have done zillions of repetitions of progressions you're ready physically, technically,

mentally then you go . Anyway its hard for him because it's the first time but you are ready for that and hard first I often use it they're not really ready for it but I will not do a lot of repetitions because they get bad habits but I'll push a bit and say well lets do that trick because I got to see again his judgement is right so there's not really risk of injuries ok let's do it . He has to have some cues and feel that he controls it enough to do it but again he is out of the comfort zone. It's a challenge for him that'll be the small difference.

I2: If it's a success great if it's not a success it's just to show him....

T2: to me it's a contract you say that if we do it we do it once and his body language is really important to me so if I say the trick and I see he hesitates he's not ready for that trick I will not do it. Its amazing for most people they really feel what they are capable of and what they cant. It's also a sign of talent.

I2: there are risk takers also ?

T2: yeah but they feel it .we had a clinic years ago with three former world champions and they had something in common they had the ability to visualize the skill they could feel it. So you say how about that trick ? pause....I'll do it. Because they could feel it even though they hadn't done the trick yet . In their brain something is telling them that they are able to do it. It's like I say jump on a table . You look at a table and you say ya I could do it . There's a point I'm looking at that and you say there's no way I am going to make that ...you'll judge that acrobatics is no different. For hard first when I am asking them to do the skill as an outsider I am thinking they have what it takes to do it successfully not perfectly but successfully so that there is no risk at all. That's from my point of view based on what physically he could do physically and mentally. And again if I see that he hesitates that means that his brain , there's nothing worse than him changing his mind so if he hesitates I say no. We'll do it another day because you are not ready.

11: What's your response if I say that hard first works well with an acrobat who's got a lot of sensory knowledge like S2 because he can look at something and feel it or not feel it as you say. Someone that, say me, you tell me to do a flip up onto that table, I could visualize it perceptually but I couldn't feel it because I've never done anything like that. T2: Regardless of the talents what I mean is as a teacher I have to evaluate if I think you are fit physically, technically and mentally. And then I propose to you to do it and then you could make the final call. But firstly I did evaluate because I've seen you training before I know what you can do, I know if you're flexible enough, if you're strong enough and if you have control of your body, if I see I put you on that one spot at one time you do it , it shows you have the control , I've seen that ok ? so I could evaluate that.

...The last part I can not evaluate is how do you feel about it. And this is when I propose something and by your reaction confirms to me that you're mentally ready or not . If you hesitate it means not then I will not do it. Because I don't want people changing their minds it's too risky. If people say "Ah" and I could see they are relaxed. In a way they could be nervous there's nothing wrong with being nervous but if they feel confident enough in their body language to me the non verbal is even more important than the verbal. That's my perception. People who really hesitate I will say no we are not going to do it. When they just say oh my goodness that's a heck of a challenge, I'll say ah do you want to do it? , ya, ok go.

I2: going back to the decision training tool ... I am very tempted to continue on that but...we are getting off track ... so random, variable and hard first these are the ones that you'd like to use.

T2: Also not on the spot but if they use modeling it helps them a lot because they've seen other people doing it – whether it's live or on video – it doesn't matter they've seen it and I think live is great because it's real.

I2: Live is better than video?

T2: I think so because it's real ...you've seen people in real life doing it. If that person could do it it doesn't look as hard now you seen people do it . If it's the best in the world you've seen it on TV fine good but when I've seen someone in my home training place do it it's not as impressive anymore it makes it more accessible so not on the spot but modeling will always remain an important part. I mention that over and over and every place you go to train where people are more advanced the next people get better faster because they have modeling, it proves that it is real. I didn't do a scientific study on it but every place you go you talk to people that's the way it works.

I2: That's true they say play with better players and you'll get better.

T2: So modeling is important not on the spot when you do the actual skill but it's there. I2: What's your plan now , this coming cycle? With S2 and decision training and cognitive skills?

T2: I said the one part I neglected the most is inviting him to do more modeling. We have modeling live modeling in the class but this is not the top model that's good because he's better and more experienced great and he's also talented but I'd like him to watch top people because he's very good but he could have access to better so right now he has this one live model. He (the model) has strong points but also weak points and I want him to do all the good points as well .

12: How are you going to do that? How are you going to implement that ?

T2: I have to invite him to go to the library. We have lots of good videos that are accessible. So in his spare time hopefully. I have to talk to him about it though. That he goes up there -I know the 2007 world championships in Quebec city is up there. That he looks at the finalists this is what it looks like and then talk with him what he learned from that.

12: How do you know he's going to do it? You're gonna check you're gonna ask him ? T2: I'll just ask him feedback – what did you learn from it? What did you notice about these guys compared to what he sees here at school? And these guys are top performers in the competitive arena so that's different but in terms of technique they are awesome so whatever he is going to tell me doesn't really matter I am just curious to see what he's going to get from that.

SL; Other things? Modeling...let's not go about the tools let's go about the skill you want to develop then what tools you want to use to do that.

T2; When you look at ... because acrobatics is so fast – hard first, random, variable is really important they have to have ...

SL; Let's go back what skills, cognitive skills does he need to work on at this level, concretely in this next mid session?

T2: He has to learn to process his/, because he's good at analyzing the skill, but he has to do it while he is in contact with the trampoline bed because this is where it's decided. Up in the air as I mentioned before for teeterboard you react and that's also important based on what you did while you were in contact but the actual skill the rotation and all that it's done while you're in contact with the trampoline bed. So he has to learn to do proper actions so he has to feel what action he has to do in this split second that it's decided .

I2: ok so when he lands and he's going to be pushed it's all ...during that moment he needs to do what?

T2: He needs to think about his body alignment his head position which is a weakness for him he knows it but he needs to fix it. His visual cue which plays a major factor because you react to what you see so if he is looking at the right place obviously he's going to have better result.

I2: A visual cue is different I think. A visual cue is if you see something coming or like the height.

T2: When you are doing/on trampoline it's like this so when you are jumping here you have to look here on take off and while you are up in the air you flip you twist you look for underneath your feet so on take off you have to always look there not only while in contact. As he is going up the first phase of the trick he has to be looking there.

It's a weakness on his part.

11: It's part of the motor organization. It's to do with the position of the head and everything.

T2: Yeah because when you look over there your head is straight if you keep your head straight your body is aligned.

I1: I don't think it's perception so much as motor action.

T2: yeah so for him it's something that he has to do. Based on that most of the time and these arm actions he doesn't control at this point in time on take off but we need to control his arm actions. He's tight so that part I don't need to focus on.

I2: He is tight you mean he's not flexible?

T2: What I mean is he is tight I mean some people are not strong obviously this is not a weakness this is a strong point.

SL : you mean tone muscle tone

T2: yes that part I don't need to focus on it because he's done it already but it's more the placement that he has to do and the body actions in the bed that he doesn't control yet and he doesn't feel the trampoline bed enough at this point in time so he's so powerful but he has to feel the trampoline bed action combined with his power to know when to push , he does but not to the extent of controlling it yet.

I2: What makes you say that he is not feeling the bed? He is too powerful what is it that you see?

T2: I wouldn't say too powerful but he's not in synch with the trampoline bed. The control.

I2: In the air?

T2: In the air as a result of what ever happens in the trampoline bed so right now he has to control from the toe to the top of his fingers the action all in synch with the trampoline bed . The trampoline bed has a rhythm so his rhythm has to be in synch with the trampoline bed and right now he used to on the floor which is faster . It is too fast for the trampoline bed .

I2: So he's too fast for the bed . What makes you see that ? What is it that you see? And we can go to a concrete example where in a recent class you felt he is not in synch ?

T2; Well if you lift your arms up you have to lift your arms up right before the bed finishes for instance no I'm sorry at the bottom of the bed . If you do it too early then it's too early . You have to while the bed is sinking your arms have to go like this and the upper body has to be here and right now he's off his arms will be there and he's trying to lift his arms really fast but not in synch with the trampoline bed so the result obviously is not as good. He will do the skill but not as good as it could be as he will be

I2: So he needs to control the speed . He needs to feel the speed of the trampoline and synch up to it. So those are skills to develop. How do you plan to ?

T2: For that I have to do more routines . I've done it but not enough. That means you do a skill a jump a skill a jump ...many skills in a row so you feel more the trampoline bed. If you just do one skill and you land and you finish you feel the trampoline bed but not as much as when you keep jumping and jumping and it's something you have to feel it's not something you have to say "ok push at that time", but he has to feel it and the best way to develop that feeling is to connect more skills in a row and at one point you do it quite naturally and people who are more talented will just get it faster , people with less talent will do it but will take more time .

I2: Just the practice of it will develop that?

T2: Exactly.

I2: That's a little bit more like conditioning than

T2: Not really because conditioning would be like lots of repetitions. It doesn't involve that much force to do that. But you could play ...what is fun is add-on games because you have random in there and you do lots of skills in a row so you get to have the feel of the trampoline and it also works on your memorization because you have to think what's before what is next so they have to think more .

I2: The charade game you're talking about?

T2: yeah in French charade in English add-on games...so you're having fun you work on your brain because you have to memorize stuff and you have to feel the trampoline bed . You also have sometimes hard first because sometimes your partner will throw in skills that you've never done and it challenges to do it.

I2: Is that part of the game to do something the other one cannot do?

T2: It's the main goal of the game actually. It's been there for ever. The best ones do it on a regular basis.

I1: It's like modeling too because ...

T2: It's modeling too . When you think about it ...I don't think we use at one point just one tool. Most of the exercises are using lots of tools .

I1: But you're saying that the motor skills are things that you want to concentrate on at the moment?

T2: yeah for trampoline because he is good at his motor skills in the way that when you look at/ the definition we have is agility, coordination, spatial orientation, balance he's got those really good. But motor skills that are specific to the apparatus – synchronizing with the trampoline bed, that he's not used to. He hasn't trained on this apparatus before or maybe he played a bit on it but he didn't really train on it. It's different. So he has to adapt to that.

I2: Other skills that you want to ?

T2: Up in the air controlling his body actions, specifically the arms.

I2: Control as in aesthetic control or just mechanical control?

T2: Well to me mechanics is quality . You do it correctly means you have quality. I2: Because from what I notice from the outside his shape his body shape is a little sloppy. I would say. That doesn't stop him from landing on his feet but it's not just controlled and I would say in an aesthetic sense.

T2: You're right . What will happen is because he's really talented ...if you don't have the quality there's going to be a point where you hit a ceiling and for him the ceiling is really high because he's so talented. So that would prevent him from reaching the ceiling he is capable of.

I2: How so? I'm just curious .How does having aesthetically pleasing lines effect the mechanics I'm just curious?

T2: It's easy. If you twist we all know the smaller you are the faster you rotate. So if you twist and your arms are loose obviously it goes against mechanics . Now if you're

tight on the trampoline bed usually you're tight up in the air. And if you're loose you are not as effective mechanically in your body actions . So what ever body actions I'm asking you to do in the bed and up in the air if I'm tight I will be more efficient. Therefore this guy could do triple twist if he's really tight and aesthetically good quality he could do 4 twists . For him three twists is easy because he's talented but why stop at 3 if we could do 4.

I2: So how are you going to go about training that let's call it body awareness ?

T2: Just connecting skills will help ...connecting skills to feel the trampoline bed to learn the control ...for aesthetics modeling will go a long way. Modeling combined with he has to watch himself more often ...

I2: Watching on video?

T2: He has to compare himself, compared to the best.

I2: Do you think he knows when his body is not controlled?

T2: oh yes.

I2: But from an aesthetic point of view? When his legs are sloppy? Do you think he knows that?

T2: I think he is aware of it . It's just that so far I didn't really put that much emphasis on it. And it's just a matter of priorities. Right now if I say "S2 how about if we have good looking form?" He'll be receptive.

I2: You need to put the attention there?

T2: yeah and for him, for other people, which is not important for them to be aesthetically right, I'll mention to them that if they want to be good they have to be aesthetic it goes together. I don't think I need to play that card with S2 I don't feel that. I1: I was going to say that in a profile interview we did he said he regretted not paying more attention in dance classes and I think he's saying "you know I'm really going to work on my dance and my flex even though I hate it." It's because he realizes I think that he doesn't have the straight legs and pointed feet .

T2; mm and when he came the first day. I remember he said "I did a few tricks in training before but I want to learn the proper technique."

I2: Proper technique includes aesthetics...?

T2: to me it meant that he was open minded to what ever I wanted to teach him. And that's the biggest asset. From that point I said "my goodness".

I2: So if we're looking at controlling the arms and the legs you are talking about modeling and video feedback that would be the tools you would like to use ?

T2: To be more effective this is the best one to ...Because then he's going to look at himself look at the best one. This is the difference I want it to be better so I have to put my legs straight.

I2: Any other skills that you want to develop this coming cycle .

T2: I don't think any because if we do that the rest will just take care of itself.

I2: I'm not saying that you should I'm just opening the question – is there anything else you would like to say?

T2: To me by watching this point of reference between what the best could do watching himself so he can compare himself to know and I know he wants to get better. If he controls better his body actions in the bed if he sees where he's going over time correcting his placement the rest will take care of itself. He will get better and better because of it.

Appendix 1.18 DBT 2.04

Case Study 2, Interviewer: I1, Teacher 2: T2, Student 2: S2

I1: So we had a little meeting with S2 it was really interesting ... and Sylvain asked him to/ there was two things we wanted to sort of reconnect with you. So from the interview we wanted to let you know a couple of things that he was talking about and just make a connection with what you were talking about because...there's a nice link going between the two of you. The first thing Sylvain asked him to take us through the events that led up the incident last session which was when he was landing on his shoulder and what he was thinking at each stage. He was really really good at analysing what he was doing once he left the bed. He took us through every single thing. "What I did. And then I did this. And then I tried to correct this but I did the the wrong correction and then I tried to stop myself with my hands which I would have done on the floor but it was the wrong thing." You know he took us through every single step. It was very interesting and very impressive his analytical thinking. And he also told us about what he was thinking before the trick. "I've got this trick. This is in the bag." And then we asked him to tell us what he was thinking when he was actually in the bed before, the last bounce, the very last bounce. And he couldn't really tell us and it was interesting when we go back to your last interview when you were saying the area he is weak in is analysing what's happening when he is in the bed. Because everything comes from that point and he said that the mistake was not enough heel drive in the bed and his set up in the bed. But when he was actually recalling it he was saying that he didn't have any thoughts when he was actually at that moment. So it connected very interestingly to what you were saying about he needs to be thinking in the bed and not thinking ahead of the action like he is going too fast.

T2: That's what people do. They think about the result and not what you need to do in order to get to the result and that's human beings that does that.

11:So it was interesting to see that coming from what you were saying was a big problem and him reflecting on it and talking about it as awareness...he was aware that that was the problem. And the other thing that we talked about was this Chinese trampolinist who made a big impression on him... Dong Ding? T2: Dong dong.

I1: Dong Dong. And he was saying that he's "perfect" and we wanted him to really tell us what that means for him...Perfect. And the two things that really came out of what he saw, and you were saying in your interview he needs to make the connection what he sees there and what he's seeing at the school and also what he sees in his own video feedback. And he was saying there were two big differences. One was the confidence of Dong Dong. That he looked like he was totally confident of every single movement and every single movement every single part of the skill was just perfectly executed and he looked totally...like he didn't travel. His head was in all the right places, his body, with Dong Dong, was lengthened and pointed feet everything so he said that ... "confidence". And the other thing he said that was very interesting is that it looked like he had done a lot a lot of practice. And he really described practice like deliberate practice and not just practice like it's his second discipline or it's...but it's like this is the thing that is the most important thing in his life and that he was speaking with his whole body. So it was confidence and practice that was the two things that he saw that was different to even say watching [2nd student in class] or his own thing. And he was saying "you know this is not my first discipline it's my second but..." And I think that was interesting because it linked through to what you were saying he just needs more time to feel the bed...he needs more time doing it. So I was just wondering. He made those two things that those were the two big differences with him. What would you say if you were looking at that video of Dong Dong and S2...what would be your...?

T2: In a way to me you cannot compare because it is true that these guys are training for trampoline so they are doing 25 30 hours a week of training trampoline. So you can't compare what's S2 is doing. But I want him to watch him just to....if you want to aim a very high level you have to know what this high level is...He cannot achieve that because the time of training and that's not the goal either. But at least he knows towards what kind of ...what we're looking for. So he's extremely talented I think he knows it but he's not cocky which is very nice he's very open minded. But [2nd student in class] has some talent I mean he has a really good raw talent but you can't compare with these high level Chinese people either. So I want him to have a reference for him to know what is really world class performance and then when I'm looking at something "Oh this is better". It doesn't mean it's good it means that there is an improvement...so you cannot try to do something perfect if you don't have an idea what perfection is. That was my goal. So I know he can't compare and he won't do that it doesn't matter to me. But at least he knows what it looks like and it is possible to do it with training. It was interesting that...

11: It is possible to do without doing 25 hrs a week is that what you're saying? T2: Ah no I lost my thought there.I wanted him to know to reference seeing that "oh no without travelling". That you could do like triple flips with no travelling at all because some people say "well you have to travel". No no you don't have to travel. And that shows that you could do it on a dime totally vertical. But if you tell people who haven't seen it they say "yeah yeah" but they don't really believe you. Once they've seen it they know it's true. "So well if these guys could do it I know I don't have the training but I know that some skills I could train to do as good as this." It is possible so to me it's important to know that because it's speaks a lot more than....even though he seems to trust me I mean pictures are pictures. Then he'll say "oh ok now I know it can be done. Then I know if I work hard I could get better in that direction".

I1:Right...so for us it's interesting that things that you're saying in your interviews are coming back through S2. I think he's particularly analytical he's quite analytical would you say?

T2: yeah he is .

I1: And I think that your approach works very well with that so in regards to the next session i guess coming up ...with those particular issues. He does mention confidence quite a bit. He mentioned that he's scared of some tricks. You know like "the full full is coming up and things like that". It was like the double lay back then. There's this whole thing he has to get over with these tricks and the height off the mat and everything. And he's aware I think he's aware that as you say two hours a week is not a lot of time to get these things together. So given those things the confidence and the practice...what's your/ do you have like a strategy for next session the next part of the course for any particular thing like that?

T2: Swing time is number one. Swing time is number one because you get to feel the bed by connecting skills. And I always do in the classes, well after their own personal little warm up ...I always do a few passes 2 to 4 passes where it's simply for spatial orientation. And when he gets to control his body in any direction and I am going to do skills to challenge a little bit but not big tricks.

I1: So spatial orientation because they may have that day been doing tumbling on the floor or they've been doing hoops whatever so you get them into...?

T2: On trampoline so that I have this reaction that I feel what I am doing I control my body. You're scared of something because of the unknown or because you don't control your body. If you know where you are all the time you feel you have the control of your body you won't be as scared. You'll be a bit stressed because you haven't known

something but then...So when he does a double layout where it's just hard for him because of the head position. He doesn't have the right head position then he's scared of it because he's not sure of the result. On floor he feels good it feels like home because he's done more floor...so if I fix the head position on take off he feels more control over his body doing the drills we're doing he's going to get calm comfortable for those tricks.

I1:Right so the strategy really is swing time...everything will come from that? T2: Swing time ...head position to have visual cues at all times...I would say at key points.

11: And I was kind of interested that he said that what fixed that thing was seeing the two side by side things [on Go Pro head mounted video] ...with [2nd student in class]. And that he was visually confronted with the fact that he was looking at the ceiling and also looking at the wall and not looking down at the mat.

T2: Which was good.

11:So that really sunk in so yourprediction that that would certainly help head position I think...

T2: It would. I mean it's critical to me because if you see the right thing at the right time you will always react. The one he had trouble with in the first session was because his head was in the wrong place at the take off and it threw him off. Then he tried to react to correct the mistakes but the main mistake was the head position on take off. This was what threw the whole thing. So if the head is in the right position on take off the rest will pretty much take care of itself. You have key areas where you have to look. Remember you look at the end of the trampoline bed and you look down where you are going to land. These are two places you look at. So if you are twisting in the right place and your head is in the right place the rest will take care of itself. So if I look at swing time to feel the bed more. I feel the head position to have the visual cues in the right place. I do swing time so he controls in variations of skills to control the body. The random, the drills we're doing all that stuff and twisting. Then it's really good because then "oh I know where I am all the time." All these three parts there and the rest it's just practice and will come.

I1: So would you call swingtime variable practice or is it a mixture of ...

T2: Variable is part of it. I use random because I want them/ to me random is the best tool...

I1: So swingtime is basically just spending time basically feeling...?

T2: ...the trampoline bed and controlling your body because when you land you don't land properly sometimes and you have to correct your position for the next take off. It teaches you that...it teaches you...so that's why it's part of variable because we change a lot of things. A lot of random because sometimes "I know have do this I have to that and what's next "which is really good. There's also hard first because even though these are not big double flips. I mean some of those skills can be quite challenging. It's heck of a challenge it's not a big trick but in terms of how many twists or in what direction, going the opposite direction it's challenging. Hard first is there as well. So you combine these tools. That helps you a lot. It gives you tools after that to be able to react because you have spit seconds to fix your mind on what you want you are going to do. And I had this conversation with Sylvain which was interesting. I think yeah you were there. About should we think or not. And I said " Think before think after but react during the [moment]". So all these approaches make you learn to react because you don't have time to analyse during that. After that it's good "ok I did this and that ok this is right this wrong"...fine. But during ...you're doing it. So let's teach them exercises ...they learn to react.

I1: So they set right they do the right heel drive their head's in the right position and then...

T2: And if they didn't set right they have to learn to fix it. It won't be as perfect but it will be safe though...and they could still manage their trick because your body will try to react and try to balance itself but there's a minimum you have to do on take off. But if you make a mistake there you have to know what to do next. And I teach them....It happened to me again. They do one trick and I said "you shouldn't have done the twist because you knew you didn't have enough rotation therefore I want you to decide if I don't have enough rotation I don't do these sort of twists because this is not safe and I lose my visual cue". You have to learn to do that but the only way to do that is when sometimes it happens. So ok now learn from that. Learn from that. "Next time you didn't see where you were because you did a twist you shouldn't have done this twist..."It's not because I am asking you to twist that you do it. You do it because you feel that you're in control to do a twist. And I want that. That to me is very important and that's how you will reduce the amount the risk of injuries.

I1: Great so I just wanted to keep you in the loop because that was really interesting what he was saying. He was really touching on that the problem was the moment in contact with mat and whether the cognitive process was going on there. He couldn't really tell us what he was thinking at that point. He was so analytical with the before and after but at the actual moment.

T2: Now look at the moment because people think (something indistinct) they forget what's the most important.

11: He certainly realises that's where it's all coming from...he gets that. And I also think that ...he's aware that you know the best in the world it is this thing of 25 30 hours a week. It's the difference....

T2: But that's not the goal. It doesn't matter but I think he's aware that what it could give him in terms of advantage it terms of acrobatic skills. I think he's aware of that. He knows he won't get that level of this Chinese guy. And that's fine we don't expect that either. But again it's a model, and that model is very important.

11: And he was saying he wants to add trampoline to his repertoire that he can offer a circus company in addition to his acrobatics, his juggling and his hoops so he's got a big set of skills. So I think he's as you say he's aware of that. So...good. So they'll be like a two week gap and then the next cycle will start March the 5th I think it is through for 6 weeks. And you know really we're aware that swing time's going to be the exercise that you use for getting him this feel of ...the bed... of that moment when everything happens. That's the big area we're working on. Great. Just repeat one more time, so S2 does have a little bit of a problem which he does tend to do fairly irresponsible stuff outside of class. Is that what you're saying.

T2: yeah he's too excited as a first year student. He wants to (indistinct) he doesn't take a break he doesn't relax, and do crazy stuff that he shouldn't be doing but sometimes you could try to guide someone or life teaches you but he has to learn to care of himself a bit more. It's choosing the moment when to do tricks and...

...this one trick he did. That he told me now and the students told me like many times [he was] landing badly. I just suggested to him one progression that to me is a key element to get to the trick right. But I didn't say you shouldn't have done that. I didn't want to say ok "don't do that, you shouldn't do that". It's look like the old guy saying that. I didn't want to get that part. I think he's smart enough to understand to realise that if he wants to train and get a high level exploiting his talent he's got to train wisely which he doesn't do right now.

I1:Ok so that's an interesting thing.

T2: So to me I'd like to wait and see if he doesn't fix that one point. But if I ever talk to him I want it in a gentle way but not as someone who says "you shouldn't do this because you're going to hurt". Because I don't think this is an approach which is really productive. "Just be cautious because you're body is an investment but sometimes I say " try to stay healthy because we're having fun training " and he's smart enough to understand what it means.

I1: great

Appendix 1.19 DBT 3.01

16th Nov 2011 Case Study 3, Interviewer: I2, Interviewer: I1, Teacher 3: T3, Student 3: S3

12: Starting from now we are going to really start to integrate the new techniques of training by respecting your own rhythm...it is important for us to see whether these changes are going to work or not ...you may have to come out side of your comfort zone to do this experiment with us but it is the only way we can do this to figure out if it's going to work or not...

T3: agreed

I2: just remind me what this is?

I1: modelling ... what she wants to achieve with the modelling.

She's using variable a lot but we want to get S3 to talk?

I2: When you teach there are several tools you are able to use some you use already naturally for example variable training where you the change the exercise on a regular basis which you do already. One time you used questioning we observed that. T3: At each time.

12: You asked (S3) the question "what did you not do?" ...now that was interesting that is exactly in the spirit this helps the student reflect on what she did instead of always waiting passively for the answer. We want to bring the student to become more and more autonomous . So she is able to evaluate their own performance. It is not to get rid of the trainer it is to make more like a collaborator than a trainer.

T3: Exactly

I2: So you work together instead of just waiting.

T3: Agreed

I2: The things we find interesting are when you asked her to improvise...we ask the question: what is your objective when you ask her to improvise what is the goal or the objective of that moment.

T3:So for the improvisation it was not the first class. We start with simple challenges so to speak we put the bar low at knee level so I told her to improvise but remind standing on the floor. Just to give it a feeling of how the bar moves around her while she remains always standing on her legs ... just so she learns how the bar moves.

So the second part of the improvisation I told her to do the exact same exercise with the trapeze but this time laying down. So we go through phases from standing to laying down and what you saw was the third phase where we were mixing both laying down and standing. Because I understand that S3 danced before. I know well her story: she is someone who danced a lot. But dancing on your legs and dancing on a dance trapeze apparatus are two totally different things. But I asked her to let her body move around the trapeze and with the trapeze but she didn't have a good rapport with the apparatus so we had to try something else. She can't work it out with the apparatus.

I say to her "S3…let your body go and just try to move around the trapeze." That doesn't work. So I say "look this is down …"

I2: on to the ground?

T3: um hmmm

I2: It is easy.

T3: It felt like the trapeze was bothering her because she needs to move but she is not used to having something beside her.

I2: When you say it doesn't happen what do you see?

T3: What I see is that she always using the same movements but she's not opening up to the apparatus ... I see she is uncomfortable staying there.

I2:She always does the same movement?

T3: The same movement/the trapeze remains a barrier instead of a partner...it's like a an object that disturbs instead of dancing with it.

So I try to give different tools to develop the relationship between her and the trapeze. I2: Two things; what do you want her to do when it works well, what are your objectives.

T3: So there are some students that take to these exercises right away and their are others who don't have a big movement vocabulary that dance around the trapeze and once they stand in front of it it becomes there's like a mental block that happens so there's no notion of the object dancing with you.

I2: LIke you say not like a partner.

T3:Exactly

I2:We noticed that in the improvisations you direct her "try this, lift your leg". We were wondering if it's really improvisation or if it's more of a variation of the exercise ? So in a way the exercise improvised for you. More random practice meaning that your directives are random. You improvise in a certain manner as a teacher you don't know where you are going but you are still directing all the same.

T3: I did it that way because these things she did in classes before. Because it was her first time and we weren't filming ...she wasn't able to remember but I remember what she did before ...I remember what I had coached her with before and what she's already done.

I2: So you/ she can refind

T3: Exactly...But at some point when you keep repeating certain movements you create another baggage another movement vocabulary. Often some students will improvise and never repeat the same thing.

I2: So is the idea for her to remember all the movements?

T3:So I ask them to remember the movements so that they can keep going and progress because it helps them to continue to refind things otherwise they are always repeating the same thing.

I2: The idea of the improvisation is to construct more and more perhaps a larger movement vocabulary so the students can have this in their memory bank to use at any time? So the student will gradually gain more movements and be able to chain them together at any time.

T3: The movements and the memory accumulate and then they can use whatever movements...each class they will do different movements but repeat movements that they already know because if they don't accummulate a base of movements what happens is from one class to the next they don't remember any of the movements and we have to write them down and then they see what they've written and they don't remember what the movement is so even when we're doing movements and we write them down sometimes the student can't even imagine the movement in their head and they don't remember which leg they used so I always have to remind them "it's this leg that you're using."

I2:We also noticed at a point you went and spoke with someone...who was that?

T3:Yes I think I went to see [head of school].

I2: When you left we saw that she didn't do anything she just sat and waited for you. She didn't try any experiments on her own and we find that very interesting because one of the goals is to build the independence of the student...and we would have like to see her continue working even though you weren't there.

T3: Yes

I2: So maybe we'll test that once in a while. It'll be a good way to test if the student is developing some autonomy. ...one leaves the student waiting for a minute or two on a pretext just to see what happens then. Because ideally the student by the end of the year is able to continue to work on their own...that's an objective I should imagine. T3: yes

I2: The other thing we noticed was the silence...so the student is silent what is your objective with the silence of the student. What would you like to happen? T3: I would like there to be a better interaction because most of the time they're either just listening... they're interpreting my words and at some point I told her "do you want me to speak more to you (to) communicate more?". And she said "yes I would like that." But it still didn't help she still didn't open up and want to talk more. Then I understood that even if I tried to force to communicate with me more it would just be detrimental to the whole experience. I sort of understand where it's coming from and that's why I don't push her because I know it's going to come but if I push right now she's going to feel so uncomfortable and she's already not very comfortable and we don't know if it's a habit of hers to not ask questions or to always just step back and I can't really figure out...

...and I can't really figure out...because I have another girl in contortion who is exactly the same who never speaks and when I ask if she has any questions she always just says "no."

I2: Does she have questions and she doesn't want to ask them or maybe she doesn't have any questions maybe it's all clear for her ...we need to investigate that.

T3: For me [something indistinct].

I2: Therefore what is your plan?

T3:Well I decided that I am still going to continue in French and Russian because if there's some things she doesn't understand in French. ...and then I don't speak English that well so I try a little bit English but then what I am going to do is I'm going to keep asking them the questions "what is happening here?" and make them talk more. I2:So we are entering into the type of teaching which is called questioning. T3:Exactly...

I2: So slowly you're going to bring her to ask her own questions.

T3: Yes

I2: We'll encourage you to ask her more questions.

T3: And when we started with questions with her she had no knowledge of the trapeze at all ...

I2:...now she has a little more so now she'll be able to answer a little bit better... I'm going go over the list of the decision training tools and strategies... so one of the teaching strategies is called hard first and it is a little complex so in a situation for example where we were playing tennis instead of just practicing your right hand we would play a match because this is already a complex situation ...maybe if we haven't mastered the right hand even if the ball goes flying in every direction we will play a game together ...because that's what we're looking to attain. In the circus situation it could mean many different things it could be mean having an audience immediately even if you're not ready, it could mean having music and you're asking to do the technique but with the music and that could add complexity...

T3: That's in the next class...but we already did that. .

I2: ...or it could mean to do it faster, slower all kinds of ways and I think you're a better judge of how to make it more complex...so what we're looking to do is to make the exercise more complex even if she's not ready. .So what that means is she probably won't execute it very well. So she can be confronted to know that eventually she'll have to execute these movements well.

...So random practice you do already. It means just changing the exercises often. I1: That's variable.

I2: Ah no random it is like improvisation. Variable that's when you change often. Video feedback ...we have something to propose. Jon installed his computer and it's constantly on. So at this moment a lot of what you're doing is that you make, you explain and then make her do the exercise. So at this time you do this a lot - you make her do an exercise and then you stop and question her about the exercise. You tell what was good what was bad. So already you're training to be careful about certain things. What we would like is that you become accustomed to video taping. So instead of giving her feedback verbally you tell her the feedback but with the video. So you visually show her. After that you would have to eventually use the video and instead of telling her the feedback you just say, "do you remember the feedback last time...what do you see in this video now?"

[00:14:29.062]

...So it is something she should already know but you're not pointing it out she's pointing it out herself and eventually ideally she would just see the video and she would do all the work herself based on her own performance in the video. So when you want to give a correction hold back and say, "let's go and see the video." So in your classes you should use this video so that the students get to used to the video feedback. So she can analyse her own performance. If you want we can write all this down for you to remember.

T3: Yes I'm trying to remember everything so we can practice.

I2:We'll send you all that...don't worry we'll send it with explanations.

...Another tool is modelling. Modelling is a technique where we show somebody who has perfected movements. So what we noticed is that you yourself demonstrate but it's not quite modelling because what you do is you give instructions but you are giving a verbal instruction and a visual instruction at the same time. So you say "lift your leg" and you lift your leg, "take the bar like that" but that's not modelling is to take them to show them somebody who's really good so that they can see the movement being executed fluidly. It can be you it can be a more advanced student. It's to show the movement with minimal explanation so the student will be watching the movements executed with control and fluidity and grace.

...I mean you can speak to the student about the modelling and about the person they're watching..."what is your impressions on these things?"

Questioning and delayed feedback is that you don't say right away you delay the feedback. You wait. And this is kind of hard because there are moments of silence where when the performance finished give the student time to think about the performance and if the silence is very uncomfortable you can ask her questions: "did you notice that this..." or "is there something you forgot to do?" or ...these are judgement calls. Eventually and ideally once she's finished her exercise and she will know ideally she would know right away even before you give her the feedback but for some students it'll take time right away. Slowly it will happen. Specially things you

think she should know because you already went over it with her 10 times. Just like the time when you said "hey you forgot to look down." She already knew that she had not done that ...she already knew the answer. So you're not necessarily asking her feedback on things that she wouldn't know already. It's things that she should know. But you can wait to see if she notices these things because we want her to be able to analyze her own performance so that she can memorize and remember the performance she just gave. And where her attention is so that she can sort of come out of the performance and look back on it through different eyes.

So these are all a lot of different tools and I don't think you should try them all at once right away. You could choose a few and the ones you choose it'll be nice to talk about together and don't forget to do it this way and we'll try to guide you and what we would like to do is really test all these new tools which you may not be familiar with and eventually you can give us your feedback on how these tools and techniques work and it always depends on the student as well. Different students different techniques.

...There's never a right or wrong answer it's just to observe what's happening and that's it.

11:We're just playing a role like a different role to change the interaction between you. It's not like/ because she has improved amazingly so obviously it's working what you're doing for sure her spatial orientation everything it's like amazing and she's obviously working hard on strength she's gotten stronger for sure. So for us to observe something we kind of have to mix things up a bit to see "ah this decision tool in this situation ...what's happening?" And we do have a challenge cos she doesn't speak and she doesn't ...that is interesting for us

I2: So just because she doesn't speak doesn't mean she's not autonomous. It's not because she doesn't speak that she' not autonomous.

T3: She's silent not because she's not independent or autonomous but mostly because she's doesn't have the movement vocabulary. I'm sure that it's not that she's not autonomous. And then I try to see how far we can go together and observe her autonomy and see how far it reaches and I speak with other coaches to find out if she's performing well with them or not ...is she talking or not.

I2: Decision training is training artists to be independent and autonomous. So it's a type of training that will eventually be self training rather than training the athlete. So we're bringing the focus to something a little more than just the performance.

T3: I understand.

I2: Do you have any questions?

T3: No not really. I feel very comfortable and I'm open to trying these things.

I2:We're going to try this til the end of April. We can adjust things.

T3: Well we'll see how she responds to all this but plus she's under a little bit more pressure right now because we have to prepare her audition for her first year entrance so she's already in a stressful situation so we'll see how she reacts to all that and we'll see how she pulls through and trains herself throughout all these stressful times.

11:If S3 is successful and she auditions well for first year would you want to teach her in first year and second year?

EF :yes yes

I1:You would teach her?

T3: Yes

I1: Right through to third year?

T3: Yes yes

I2: Would you teach her because you want to or because it's just that way?

T3: Well because it's that way. If they get into first year we continue with them 1st year, 2nd year, 3rd year.

I2: ok

T3: Thank you

I2: Thank you

I1:Thank you.

Appendix 1.20 DBT 3.02

29th Nov 2011 Case Study 3, Interviewer: I2, Interviewer: I1, Teacher 3: T3, Student 3: S3

I2: So T3 we have been observing several classes and we saw that you were...

T3: Little by little...

I2: ...yes little by little applying things. We want to know how it's going from your point of view.

T3: It's going well...maybe I would like to use a little less video these days because I feel when I'm showing the video it takes a way time for me to spend with her. Because it takes more time...but on the other hand since she's not speaking it's good because at least we're communicating.

I2: So the video becomes an occasion (to communicate).

T3: Yes ...these days.

I2: Do you think you could use the same type of communication tools without the video? Less based on looking visually but on internal sensation. To discuss with her at the level of internal sensation.

T3: It would be possible except that I tried. Either she is so shy. Either she doesn't understand. But she does understand because I speak Russian with her so she understands. But she cannot give feedback. You will ask her a question and she will say she will answer that everything is fine, she is satisified, everything is correct. Probably because she's not. She's visual. She doesn't have it in her body. So she cannot feel what she did right what she did wrong. So these days the video helps us for that. To go more on the inside. So with the video she could tell me, "ok now my arm was not right." But if you ask her without video she cannot answer.

I2: Do you think it would be possible to try something like "ok now we are going to do the sequence...Or part of the sequence and I want you to put your attention on your arm."

T3: ok ... yes that would be possible.

I2: Because it's becoming more and more automated so she can start dividing her attention.

T3: yes yes yes.

I2: Because that's a little bit the danger I think.

T3: Exactly

I2: She's holding on... (SL indicates holding on to a rope)

T3: Yes she's holding on still. A little bit. It depends which figure. We would have to choose which figure but yes it's possible. If it's a figure where she is holding on with two arms and lifting her two legs she's not ready for that but there are figures where she could pay attention to her arms.

I2: And that would not be too dangerous. She could divide her attention.

T3: Yes she could do that.

I2:So you think she's starting to communicate a little better?

T3: For real?

I2:Yes.

T3: No I think the level of communication is still very low and I'm realising (this). I mentioned all that to her during the exams this week.

Because what I realise this week is that we are not augmenting the strength like I was hoping to. She started very well but then she was sick. After that she had a sore back. It took her two weeks and she came back. She went back to a lower level of strength. I don't think it's bad but what I'm observing is she is not developing individually that strength. She's not working. She's coming to warm up. "I'm going to work with other students." But she will not work on her own. She won't lift her legs do tractions and things like that. I have the intention to talk to her. Tell her that by waiting and sitting nothing will be improved.

I2: And why do you think she's staying sitting?

T3: Maybe she's tired maybe she's not used to working so much.

I2: Because she has other classes also.

T3: Exactly she's not used to that. Or she does not understand that it's time wasted. Often they don't make the link that the time when you come to warm up if you have nothing to do you could work on your strength. They don't make the link.

I2: There are other students that you know who use this time?

T3: Yes

I2: From their own initiative?

T3: Yes

I2: You don't have to prompt them to work?

T3: Yes if they feel they need to do it they will do it.

I2: Does one of those students work at the same time as S3? Does S3 have the occasion to see?

T3: Yes of course there's many people at the school who work on their own. They're going to do musculation on their own. They are going to at least go and explore their apparatus. She can come to free training sessions. And on top of that she's staying in the residence but I'm excusing her because she's Mise à Niveau. She is tired she is ill so of course she cannot work til 9 oclock every night. So you have to be reasonable.

I1: I agree. I haven't seen her Saturday or Sunday come to the school to train.

T3: No she doesn't come.

I2: But she could? She has the permission to do it?

T3: Yes she has the permission and also every night after 5 oclock is she wants to.

There's [another student] who is already always there. There's other students – [another student]. She 's always there.

I2: Those people...they are in residence also?

T3: [First student mentioned] is not even in residence. He's coming all the time. So there are examples.

I2: There are models.

T3: But there are some who don't follow.

I2: Ok I would be curious to ask her the question if she's conscious of that situation and why.

I1: Yes next week we could ask her.

I2: Yes we could ask her.

11: Is there a specific example that S3 is starting to speak more? While she watched the video and you are asking "what is it that you see on the video?"

T3: "What is it you don't like?"

I1: Yes "what you don't like?" She answered "I am robotic." And other things.

T3: Yes she is visual because at the beginning I asked her, "What is it that you don't like? What is it that you see that you don't like?" And S3 said, "no no it's good..."

I2: She was happy?

T3: And after that I asked her, "no no look carT3ully. The arms…look at your legs…you are happy about everything." And then she answered "no I'm a little bit robotic. I can see my movement is rigid."

2nd part. DBT3.02 audio translation part 2.m4a

I1: It was the first time I heard her comment on what she did.

I2: Does she change afterwards?

T3: Yes yes she does change. I cannot tell you they are radical changes. She's trying. At least I can see that she's trying to do things differently. But I realise that through the lack of force she cannot change much because she's holding herself so she's not free from her body to be able to try. I understand. I'm not asking for the maximum but I can see she's trying to do those changes ...it's working.

I2: So you can see a change directly linked to...?

T3: ...to the video ...yes. What's happening with her is when you are saying "one more time. We're going to do it more time." If we say, "we're going to do it 10 more times." She's going to do it 10 more times but the other side of that coin is that she will never ask questions because you know if it doesn't work S3 is not going to be able to know what to do. She's not going to be able to change but once again I feel it's because she's lacking basics.

I2: Another suggestion that would be interesting to develop her autonomy would be to ask her to offer her choices. You could redo it or change or do something else and to give her the choice but a simple choice ...this or that.

T3: If we give the choice you know what she's going to answer, "redo." I am absolutely certain. So she's going to redo it.

I2: Ok well let's try that .

T3: If I ask her once again, "are we going to redo it? Or continue?" She's going to answer, "I don't know." But we need to try.

I2: Let's confront her with making a choice but a simple choice.

T3: Yes exactly.

I2: Because she is still in the learning process.

T3: Yes ok. I think she's too "good" a student.

I2: What do you mean she's too "good" a student?

T3: Too "good" a student is to be too passive. That means that she's listening but you need to be dynamic to try to go beyond that. But to be a "good" student and passive.

SL; What do you expect from a student that is not a "good" student?

T3: Who is not a "good" student?

I2: What I mean is you are saying she is too much of a "good" student "trop sage" therT3ore a student that would not be a good student would ...?

T3: There are students who will answer on their own to the question I'm asking and they will try to. They will try even if it's not working. So they are trying to go to the maximum to look for the solution the movement the passage. We're not even talking about technique. S3 she will execute always the same way even if I'm telling her, "no it's not working ...try to do it differently."

I2: If I am telling you "problem solving". To be able to do problem solving alone. She is too "good" a student. She's asking you to solve the problems.

T3: I would like her slowly little by little I'm not saying immediately but to solve the problems on her own. Because otherwise the body is there. The physical abilities are there. It's just that the level of emotion and character. She's needs to develop that.

I2: Now the question is she is not giving her opinion. Is it because she is too shy? Or is it because she doesn't have an opinion?

T3; You know what Sylvain? This I never understood. At the beginning I was thinking she was shy and I was thinking later as time past. But now with the visuals she's answering, "it's ok." And it's true she doesn't have an opinion or she doesn't really say what she is thinking. So now I am asking myself the question.

11: If she had the possibility when she's face to face with you. She's a little stressed. She told me she was a little intimidated.

T3; Why?

I1: Why? I don't know. The stress may actually inhibit her thought process. I showed the video side by side when you are face to face and when you are side by side looking at the video and I asked her, "what's the difference?" She said, "I am stressed here...here I look relaxed I am focusing on the video."

T3: Ah ok. So when she's executing the movement she's more stressed than when she's looking at it.

I2: When she's talking directly with you face to face she's more stressed. When she's looking at the video and talking with you she's less stressed.

I1:So

T3: Is she stressing because she my English is not so strong and her in French is not working. Is there a barrier of language?

I1: I asked her. She said, "T3 is a very gentle coach she works you hard. She is much gentler than my last coach who was mean."

I2: (translates) Her last coach was mean.

I1: And she was also Russian.

I2: (translates) She was Russian.

11: When she didn't do something well she had to keep doing it doing it until she got it right. And when she did something wrong the coach was yelling at her. SL translates.

I1: Maybe there's a bit of background.

T3: To tell you truly it's true. In this environment the kids get yelled at but you cannot forget and you know I was part of that environment. I worked with children. They are 8 or 9 on the mat. You go through each one individually. You don't have the time to correct a thousand times the same thing. Me I'm one on one with her. If I have 8 and you're telling 1 time, 3 times, 5 times and she doesn't correct you know sometimes the coach loses their patience that's true. In gymnastics it's often that and now you look at the person and you are thinking it's not possible that they are yelling so much but they're just losing patience because competitions are arriving. The students don't perform as they want them to perform so ...it's not an excuse.

I2: I was wondering when the coach works with one student and there are 8 of them waiting are there 8 doing nothing?

T3: They are busy all the time ...they are not allowed to do nothing. Now my daughter she's doing gymnastics. They have 6 hours of classes. Sometimes Saturday and Sunday. And if you stop for one second you are going to get kicked out so you are working with one but the other ones are working.

I2: So S3 has probably worked like that?

T3: Normally yes but now I have a doubt because at her age. If she was the age of my daughter, 13 or 14, I would think, "ok she had a bad coach and she's in a period of transition." But she's 19, excuse me, but at 19 you should be able to know to make the difference after a week. So it's not an excuse it's ah how do you say that? It's a life experience to know how to live. Me I'm afraid it's coming from farther. I2: Well we don't know.

T3: That's right we don't know. She needs to do this (meaning getting more involved) and faster. Now it's not me who is going to yell at her. She is herself responsible. If at some point she was 9 or 10, ok but now she's an adult.

SL; Ok. Other things you would want to talk about?

T3: yeah we are going to continue like this.

I2: And you T3 do you have other things you would like to say, comments on the research.

T3: No it's a process.

11: Just a little thing a technical thing with the video. When you see something she should pick up just stop the video and ask her what you see. Ask her quickly, "what do you see? Good bad what's going on? Tell me. Use the video.

T3: Yeah use the video more immediately.

I1: And then rewind and ask her," what happened there?"

T3: I see.

I1: Get her to look more actively.

T3:(agrees) Yes

I2: Yeah direct her attention a little more.

I1: "How many times did you bend the leg then?" Just test her little bit.

T3: Yes to do it like a test.

11: Just to make sure she's watching. Then maybe we'll get something more out of her. End of interview.

Appendix 1.21 DBT 3.03

Case Study 3, Interviewer: I2, Interviewer: I1, Teacher 3: T3, Student 3: S3 I2: We are starting a new cycle and we just wanted to have a debriefing on the previous cycle.

T3: ok...And the previous cycle it went well, very well but not as well as I would [have] like[d] it to go. It didn't progress as much as I expected...but I give it a positive note because the student was at zero so we needed to give it a start. The student does not have much initiative... you need to wait also and I had the impression... you will see... I don't know. I had the impression with S3 something clicked after the auditions. Was it due the audition that she's afraid she's not strong enough and she was holding back I don't know.

In the audition she did well. She performed as expected ...but working with her last week and this week it looks like she made a lot of progress we'll see if that lasts. Because what I was telling myself was that she was not progressing fast enough not that she does not have potential,... the approach that I had with her was not bringing enough results.

OK so we do it we look at the video we give feedback we go back ...but ordinarily when I proceed it's quickly one time after another that we do. We repeat ...and after that repetition she becomes comfortable. And after 1, 2, 3, 4, 5 repetitions then ok we talk. So I was telling myself "if we're trying this time to do this" like for example we do two positions and we do it three or four times without stopping and then we look at the video

... because for someone's who is a beginner if you just do it once it's not everybody that is able to register.

I2: So before you do a feedback on the video?

T3: yeah we need that she does 2, 3, 4 times and then we do the feedback with the video and then we explain and then we are redoing it 3 or 4 times. Then she will have

strength, she will have an understanding, she'll be able to break down the elements because she will have time to feel it.

Otherwise...also I have her just twice a week, once with Sarah twice with me...it's not enough time.

I2: Yeah ... I think it is a good idea.

T3: So I would like with her to proceed differently.

I2:OK ...we are doing test ...we're testing.

T3: Yes that's right ...we're trying things.

I2: What did you see when you said something clicked? What did you see?

T3:Already there's a speed of execution there's a memory that she applies from one movement to the next and she'll redo the something and she has strength all that she did not have before to execute...she's more comfortable. Now I don't need to be beside her to support her. she's doing it. So something unblocked. We will see. I was happy with those days.

I2:When you were saying ...well maybe it's the same answer ...when you were saying she did not progress as much as you expected. What is it you don't see...what would you like to see?

T3: I would like to see a little more figures that are accomplished and accumulated. We haven't accumulated as many figures and movements because I could not give her as much...because I was waiting for her to develop. That I did not give to her because we were waiting for her to unblock. So what I understood was that for someone with no base...because some arrive with a base already and then you continue with them but for her, who comes from a totally different environment - milieu, before you do some kind of feedback probably the first session until January it should just be accumulation of figures.

Once accumulated then she can deliver ...because otherwise we are late in the accumulation and she cannot improvise or give anything more, She has no knowledge. Even when she's looking (at video feedback) she does not know how to translate that in her body.

I2: When she's looking?

T3: Because I ask her "look at other videos". Yes she's looking she's watching. "Yes I liked this movement but I don't know how to do it." She's not able to visualize her own body from the inside because she doesn't have experience. So I was looking at that and I felt ok I understand. Probably for somebody who comes from gymnastics it would have been easier because they are used to using their body like that but for somebody who comes from dance who is not used to having the body upside down once on the apparatus.

I2:But I thought she did gymanstics? (To Jon) Didn't she do gymnastics? T3 and I1: Rhythmic gymnastics.

T3: For two or three years when she was seven something like that...(gestures that that was too long ago) long time ago.

I2: So when you do artistic gymnastics it is more acrobatic?

T3: Exactly yes because if you do rhythmic gymnastics at a high level it's like ballet. If you get to a competitive level then you have the object you catch it, it looks like juggling

... but she does not even have that because I was looking at her how she passes the balls and I said "S3 don't you come from gymnastics?" she said "yes but I was not in at a high level."

I2: So what is your plan for next half session?

T3: Accumulation of technical figures.
I2:What do you mean by that?

T3: It means that I have to teach her other movements other positions as much as possible.

I2: So it's learning technical figures?

T3: Yes technical that's necessary.

I2: So when you say figure if I understand from the last time we talked it's not just to do a split it's to arrive there, transition.

T3: It's a combination.

I2:But you when you say figure what do you mean?

T3: Well for example when we start learning the turn on the back, turn on the back is a figure.

I2:Ok so that's a figure.

T3: That's right...after we have one drop to do.

I2: One drop.

T3: It's to learn how to roll and then unroll while you fall.

I2: Are you going to teach her many drops?

T3: We are going to start with one but she needs to do step by step to do more. Then at least she will have the tools. Like with the first one we researched together she doesn't have to research alone. For mise à niveau she learns more than one but we are going to still keep researching. After that what we said that she needs to do before the end of the year to have a combination that's not just a figure that's a combination with a tour, a grand tour, a small sequence while spinning, and the fixed. So then there are three trapeze positions - fixed, grand tour, spin that she needs to decide which figure is going to work while balancing - the grand tour or which is going to work in spinning and what we're going to leave for the fixed. Because it's not every figure that can function that can work on the tour.

I2: And how are you going to know?

T3:She needs to decide on her own but probably she will not give the right answer but that's normal. At least she's going to try to imagine what's happening in the grand tour which one she's going to be able to do while balancing on grand tour and in the spin. I2: When is it she's going to imagine that?

T3: She's already doing that.

I2:Do you mean between classes or during the classes?

T3: No no between the classes... and during the class she tells me "ah this I think we can try it" in the tour and then I say "ok let's try it". And then S3 will realise it does not work (EF laughs).

I2: And why do you think...why does she think it would be possible?

T3: Because she sees the figure for what it is and she thinks that maybe it's beautiful but she doesn't see the difficulty of spin.

I2:Ok so she does not try it ...I mean she does not practice?

T3: No. She hasn't tried it yet she hasn't tried it spinning so today when we tried it she could not lift her legs because the amplitude is different (she makes a gesture of pulling) and then S3 said " oh no it's not working." Because normally it functions but at this point she does not have the strength to...

I2: But you still let her try it.

EF: Oh yes.

I2: You knew it was not going to work?

T3: yes I knew it was not going to work we put the mat there.

I2: But you still let her experiment?

T3: Yes because she needs to understand why it's not working.

I2: Is it a lack of strength or...?

T3: Yes a lack of force. Because she will not...you know that used to (work as a static figure) ...tipping the shoulder back to lift the legs and to hook the leg but when it's spinning you cannot tip backwards because when you tip it pulls you outside and you can't lift the legs any more. You need to stay like this (she lifts her arm close to her chest showing how she should lift the leg). So you need to stay like this you lift your leg and then you lift the legs up along the body. So that's a technique that's a little different. We start looking at that today with her but to do that I need to do preparation because she's not ready for that kind of lift ...but at least she tried and now she knows what works and what does not work. And for the next class she's supposed to have a small notebook in which she writes this in the balancing (section), this is in the fixed (section), this is the grand tour.

I2: And this is her who will decide?

T3: She will write it down and then we'll decide together because sometimes she won't be able to decide but they're other things that will be better - grand tour or spin ...and she's not able to see that but at least she will have done the process so she gets the habit of being involved.

I2: You think we could ask her, it's just a proposition, to try on her own to see what works in the grand tour, to see...so not only you have written it down but you will have tried it at least once or twice.

T3: Oh yeah that we can do.

I2:To test so she already has an answer to that question.

T3: yeah and on top of that it will make her practice...yes it's a good idea.

I2: Because we're trying to find ways for the student to develop autonomy to work on her own, to fix her own objectives like to decide what she wants to do, to plan. After that what is it she needs to do to realise. There's like three stages - planification, production, evaluation. So if we can develop some kind of autonomy in the planification.

T3: (shows signs of agreement).

12: If she needs strength for example could we tell her, for example, "ok you need strength, what muscle groups, what is it you need to do to develop your strength?" T3:We could ask her to do that, we can even ask her to do some figures, you know, to give her some physical preparation exercises so she can use that as a preparation. Like today I wanted to get her to do that at the end of the class but we didn't have the time because I was doing too many things we didn't have time (for). But ordinarily I must do that also during the class, but if I don't have time...

I was telling myself "for now I think as far as strength goes she's progressing". She has not progressed much as far as vocabular...but partially I think it's my fault. You know we must let her have more time and more space. I take responsibility that she doesn't have much vocabulary because I didn't give her that material. It's like you cannot ask the student to write if she doesn't know her alphabet. To develop more material so she has more vocabulary as far as the technical figures go ...and to give her some physical exercises that she needs to do in preparation. It's going to be specific I can't even write it down because I feel as far as strength goes she does not have a problem I already see the muscular strength when she pulls.

12: Ok so even if we talk about strength let's say she's doing tractions do you think we could let her decide ...if she's done enough? Could you let her evaluate the energy he has - it's burning, I have to stop or I'm able to do more.

T3:(shakes her head) I think not because if I let my student decide how many we're going to do it's always going to be the minimum because to be effective you need to be really tired. That's what I was trying to explain to [head of physical preparation] for the preparation. The muscle - for it to take next time a bigger load/ let's say 3 series of 5 chin ups it's not enough. You need, let's says she says she's going to do 7 because she's able to do that. But her body is not going to be able to do it. You need to have someone to help her so the muscle keeps contracting even if she doesn't have force.

I2: So it's to go all the way to where she has no longer strength and then to continue with the help of someone.

T3: So now we can ask her "how many can you do on your own?" She's going to say "well six." and I say "ok we're going to do nine." And the others she does with me. That we can tell her.

I2: But if would tell her, and it's just a suggestion, "how many can you do? six? How many do you think you could do more with my aid?"

T3: yeah ok that we can ask her.

I2:you know you ask her the question for her to fix the objective so she has to think about the objective. And she needs to understand that she needs to get to the point where she's tired, she's understands the theory about that.

T3: yeah I think now she's starting to understand yes. "Now after 3 months you've been here you're starting to understand that. How to go further". Then just ...easy.

I2: Do you think now she would be able to do a transition ? Let's say she's on top hanging she's doing a split and she could do a transition into another position. That she would be able to invent.

T3: She would be able to do that transition but its going to be very simple (she laughs). I2: She's going to slide.

T3: Exactly.

I2: Do you think you could ask her to do the transition with an intermediary position? I'm trying to see how to bring her to stimulate her to look to research.

T3:To research the possibilities.

I2:Yes that's right. How could we? Because we want at the end that she becomes, how did we say that, to be engaged creatively .

T3: For her to become engaged creatively she needs to use her apparatus outside the class.

I2: So what are we going to do to oblige her to use her apparatus?

T3: That would be to give her some homeworkOk for the next classes we need to find for example two transitions and it needs to be different and it cannot be something you know already you've seen already because too easy to go and look for some. To try to be more creative. Because the best transition is when we are not trying to be like something (she shows an imaginary model). You're inventing something ...those are the best. She needs to get there.

12: So to give her homework. That will oblige her to work on her own. How are we going to make sure she does. Because if she arrives and says "I haven't done it".

T3: No no she's obliged. I say "S3 you're obliged you don't have a choice that's it." Because otherwise we don't do the class because you haven't done your homework. Yeah she will be obliged to do it. We have to tell that it's obligatory homework. Otherwise you don't come to class.

I2: Ok but that's what we need to find , how to make her. It's like with the music if you told her "if you don't have the music you don't come to class". Any music, if she brought any music but she brought one . So there's some who work under pressure. I think that for her just the fact that she does the homework that she's creative in the

homework it's already important for her. You know towards the end you were saying a lot "I want more artistic" what is that for you when you say "more artistic."

T3: Artistic it means I want to see more freedom as far as her numbers go. I2: Like in what position?

T3:In any position she should develop it and not just execute it.And she is just an executer. But here I'm not sure it's bad because maybe it's too early. I absolutely believe - there are those who creative from birth. They just have a body that's more creative and there are those who you need to either to give more time or you have to impose it and do it with them.

I2:What does that mean to be freer with the upper body.

T3: To be free means to not fix the positions. For example, like if I have to sit I'm just sitting. You can always find a way to sit to let go of the body a little bit. Or if you have to open the arm of course it's easier (she demonstrates). Why not go through this or that path you know? Different paths for the beauty. Corporeal improvisation. It's not for everybody that it's easy. For others it takes time. I still try. I'm trying to encourage that it comes from her body but I saw that it's not going to be that easy. As easy as I think. I2:And if we were to find an exercise to make her find things with her arms.

T3: That we need to do in front of the mirror.

I2:In front of the mirror?

T3:If you want someone to be really comfortable they need to work in front of the mirror because for those who don't have that instinctual aspect they need to see to understand. Once they see it once just the arm. Just walk with the hips. Just use your shoulders and arm. It's not dance.It's just to know that your body moves outside the lines, to break the lines... that it's going to be as beautiful... because probably for them it's like security (she's shows really stiff arms in the air) to move with everything placed. We write letters at the school for the first three or four years we try and then they to form...It's the same thing. But they are those who are not creative with letters. The see the others, their letters and they realise "ah ok". They have to see. It's all the same thing it's mirroring.

I2:Except there's no mirror when you give the class.

T3: no ...at some point when I was teaching I was doing that...I was doing that in the multizero (studio) I was taking a whole class. How to move , how to walk , how to ...she needs to look at herself.

We also filmed...but when we were filming she was less able to see because anyway she's not seeing... but then when she walks and she watches herself in the mirror then she can change it.

Because for her what she's thinking and what's projecting it's not connected. I hope for S3 it's just a lack of knowledge.

I2: But for me the question that I ask is. Let say you identify that as an objective. Something you want to show her. How are we going to develop that ?

T3: Because you can tell her "be freer'. But maybe you need to have an education of that? For the first year on top of that she's mise a niveau. I'm not asking that because my objective is to accumulate technical exercises and to do them cleanly. That's that because if, on top of that, you are going to start adding choreography that doesn't come from her it's going to limit her in the technical moves. So usually in the first year I let it be. And starting the second year, and if it doesn't work, we go in front of the mirror. I2:So it's not an objective?

T3:It's not an objective right away. It's a little too soon. You learn the alphabet, and then we do sounds.

I2: So if we recap your objective is to augment the vocabulary of figures.

T3:To accumulate as much as possible.

I2:And for that you're the one who's going to be directing.

T3: Yes

I2: then there's the objective of making choices and that's homework you are going to ask her to even practice to see if it's possible.

T3: Yes to see if it's feasible...yes that's possible.

I2: That she herself tests if it's feasible or not. Even though she arrives and you think

"no it's not going to be possible" but you let her try it anyway "show me" and you see you can do it like that and it's possible. But at least that she herself does the exercise of testing what's possible with the spin without spin and the other exercise would be to tell her to...

T3: To work between classes.

I2:...to do transitions. So a position here and another position there. Find two 3,4,5 ways of going from one position to another.

T3: (agrees)

I2: To force her a little bit to be creative in the transition.

T3:What I used to do often. I feel she lacks creativity so we took 15 minutes of the class and I said to her "you're sitting ...find three different positions to be on the bar...you could be sitting , on the side, lying, three positions on the bar." After that we could do "you are standing, after that you are upside down and then you play." For her it's clear "I'm demi renversé , I have to find three positions, I'm in a tight ball by my feet ok I need to move in this position so there's no up and down."

I2: So you explore the possibilities without somebody directing her.

T3: For her ...it will teach her how the trapeze is moving. Those different positions or situations. That's another thing we can do.With her I think do that because she has no knowledge. What is it she's going to explore if she can't do anything? Now she has a little more strength she has an understanding of the positions that she can at least use to do something else.

I2:So that's another exercise you want to do with her? To force her to find different things.And as far as strength it would be for her to decide what's her maximum and to decide how much more . That she would be the one deciding. Because we want to force her to take the decisions.

T3: (agrees)

I2:So all those situations could help her to get used to the idea of deciding. It's a training maybe.

T3:But you see for some it's easier. There are those who have more character. They want to make the decisions. There are others. Now we have someone who has no desire to make decisions. It's a good thing that we force her.

I2:(to Jon) Do you have other things?

I1: She mentioned about the video models.

I2: Are there video models to observe.

T3: That's what I was wondering. If I gave her right now videos will she be creative enough to find something. That's why I never give...I give examples when we're starting to build a sequence...and I say you can look at this one you can look at that one. It doesn't mean that you take but it means you look at the structure. If i'm asking for figures she's going to come and do the figure that she saw. And it's going to be figures that were already used.

I2: So you prefer for now to not use the video modeling?

T3: Since she has no knowledge maybe now we have the possibility to find something different. Maybe I never thought it was even possible. SInce she doesn't know she tried something and this is what I'm looking for .

I2: And for her it's a suggestion. We could also tell her to find a figure and to reproduce it because it's through that she will have to find the way of doing it. Instead of telling her take this and take that.

T3: Yeah let's try it ... it would be good.

I2: I don't know it's just a suggestion because then to just choose the figure, a choice that she likes what's possible.

T3: Yes so she can ask herself "ok this I can do."

I2: So there's an evaluation of what she can do. There's that and then even she's seeing it she will have to do it. So there's a transfer between visual perception and ...

T3: Between liking something and being able to do it.

I2: Yeah because in that transfer there's a problem to solve. How to reproduce this?

T3: She's going to choose the simplest.

I2: Well if that's the case it would be her choice.

T3: (laughs) yeah that will be her choice.

I2: It's a decision that she would take. (to Jon) Did you get that? She feels that she would rather her be more creative than try interpret those things. And from your comments we could compare between what she did and the model, what she saw. Was she able to see the difference? It's all suggestions.

T3:(agrees) Because all those disciplines tissu, trapeze dance, cerceau, they're apparati where each needs to show what they are able to do. But trapeze ballant, juggling you are obliged to juggle, you need to juggle the way it is, acrobacy also, but here those who are flexible use flexibility, those who are stronger so they use strength. That's why I prefer not to let them see right away what was done already. Because after that you are no longer inventive. On the contrary.

I2: Well it's like what you want. Do you what you choose, what is the most suceptible to develop in her her autonomy. So it's up to you to choose. (to Jon) are they're other things?

I1: Do you feel because when we are close ... Would you agree that if we made the proposition during the class or would you rather for us to let you do what you decide?T3: Well we can do both...why not? We can do both. I need a certain amount of time to fix something or for her to practice because since she's resting a lot between the exercises she doesn't develop endurance.

I2:Me what I would propose is that we speak to you after the class and then we talk with you about what happened.

T3:Yeah that would be good because the last 8 mins it's her creation so we could talk during that time.

I2:Because I feel you need to keep the rhythm of your class.

T3:yeah because sometimes I feel that it's not productive for her and for me because I feel the class went by and I don't feel we've done much.

I2:I think it's important when we do the research that you keep control of your teaching. We're doing suggestions like now if S3 has homework to do it (the research) should not disturb too much. I think it's important that yes we want to change things but I still feel you need to keep the control even though we're proposing ways ...

T3: Oh yeah that's good there's no problem.

I2: Is there anything else?

T3: It was easy today it's easy to find the right time for us to meet.

Appendix 2. Focus Group Meeting Summaries and Notes

Appendix 2.1 FG 1

Summary of FG1 (recorded, French and English) Dec 21st 2011 (SL, PA, JB, T1, T2) T3 not present, Debrief with SL:

Objectives of meeting: Focus of meeting roundup of how it was going , teacher's impressions of the DT tools, and their thoughts on how they are going to use the tools (ie a plan).

How it was going, impressions – T1:

NG thought it was going well with Student 1 and these were good tools for him, that it confronted him, he's an interesting student to have with these tools,

What he wants to do with the tools:T1 wants to get more precise with the tools,

Pedagogical process in relation to the tools: SL asked him did he change the manner of this teaching to use these tools, T1 said no he is teaching the same way he taught with a student last year, it's the same situation teaching a high level student more technically skilled than him.T1 found the interviews very interesting because it made him reflect on his pedagogical ideas.

Variable practice:T1 didn't have such a sophisticated knowledge of these tools as T2, he described variable as different objectives, like the different themes which he introduces each week, peripheral vision and stuff like that.

What T1 wants to do: PA: S1 needs to appropriate all his material. JB (debrief): I got the sense that T1 does not have a plan yet. SL; not yet. JB: it's a complicated situation SL: its not about technical ability its about attitude almost that's me saying that. JB: he really doesn't like to be directly trained he's got a lot of technique but T1 agreed that there's a lot of work to do on his artistry. In relation to S2's initial rejection of using video feedback, SL: what are the foundations of his certitude, that's what we need to investigate. JB (debrief): Based on what? Is this just based on one time someone said something to him?

How it was going, impressions – T2:

Redefining the tools: T2 said he is interested in the way we have to redefine these tools in the transition from sport,

Adaption: he talked about adaption that DT is all about adaption and there's two aspects to it – activities of learning and the teaching strategies. T2 said it's all about the conditions that gave rise to the learning...SL: T2 said by giving certain exercises the learning was happening even if you don't "teach" it, through self learning almost like conditioning. The body adapts. T2 said S2 is conscious of this strategy. T2 said that he's not always giving the information, sometimes just by default the learning is happening. **Conditioning:** Then T2 says there are conditions that help the learning to happen and the comprehension of the student in relation to the teaching cues, that's about how quickly they pick up on what's going on and some students can pick up on all this non verbal teaching like S2. JB: T2 gave us that statistic 70% of students directly following teacher's instruction are not successful.

Reactive teaching, variable practice: T2 said he adjusts his plan according to the stress of the student, if he sees stress he's going to bring in an exercise to comfort, reactive teaching, in relation to stress and confidence. SL (debrief): T2 says you can react in a directive way or you can react by changing the exercise the most interesting thing is that you change your exercise. SL (debrief): Instead of your reaction being ":ok

do this" that would be a reaction to what the student did, your reaction instead is changing the exercise and through that the learning happens. Reactive teaching is different when it is directive and when it is using DT. SR: T2 said that variable is a very large category and that basically it's affecting the experience of the student, SL (during debrief): I am very much in agreement with this, it is experiential learning. SL (debrief): what T2 said was variable is affecting the experience of the student and augmenting the "experiential baggage".

What he wants to do: T2 said its interesting to define these tools, he's never spoken about quality of movement with T2 and that's what he wants to work on, is to use these techniques to affect the quality of movement and modeling because the school's objective is a stage oriented artistry of movement and not just a street aesthetic, T2 said S2 has extraordinary corporeal awareness. SL (debrief): I think the goal is that . After that you can choose if you stretch your legs or not. But you are aware that it's a choice.

Discussion on defining Bandwidth:

PA said that bandwidth varies according to the task and the students, it could be a very narrow bandwidth when you are starting off depending on the experience of the student. SL (during debrief) : the end of the discussion was that bandwidth does not mean no feedback, it just means a delayed or reduced feedback and T2 took it as no feedback. JB: that was interesting because we actually just asked him to reduce his questioning initially. It is interesting how people take a directive and then go ahead with their understanding of that directive.

Timing of bandwidth: T2 said that obviously in 3rd year the bandwidth is going to be very wide, he said its very hard at first with the beginner and he thought we were telling him to take the feedback out (we were actually telling him to reduce it).

The ubiquity of bandwidth: PA: bandwidth is happening all the time, when they don't know a lot the bandwidth zone is small, parameters still have to be defined for it to be bandwidth. Obviously the idea of risk is an element but it doesn't eliminate bandwidth. As soon as a student is able to make an evaluation you are in a bandwidth. SL (debrief) agrees the bandwidth must be very small (with a beginner) but even if they don't know what happened they still give you feedback whether it was strenuous or not, whether they were comfortable or not. JB (debrief) bandwidth can be generated by the student from the start, you can generate your bandwidth from the student. SL (debrief): yes because after a student says "I was uncomfortable" you can say "well do you know why?"

Models:

JB:T1 said S1 doesn't have a model . SL (debrief): he doesn't want a model , he's very much about finding his own self, his own style, his own statement his own way of doing things. JB: his "authenticity". SL: but then T1 said "of course we are always influenced" and I think that's important. JB: like those guys S1 hung out with when he was young, SL: then they become like a guru for him , someone said something once and then it becomes a dogma .

Wrap up:

SL telling the teachers to take a gradual appropriation of the interventions, develop a plan to use the DT tools.

Appendix 2.2 FG 2

Summary of FG2 (recorded French and English) Jan 19th 2012, (PA, JB, T1, T2, T3)

Objectives of meeting:

1. For each teacher to identify the main cognitive abilities that need to be developed in their student.

2. For each teacher to say why these cognitive abilities need to be developed and to put forward ideas of ways in which these abilities could be developed.

3. For the group as a whole to exchange ideas regarding cognitive trigger exercises/activities that would develop these cognitive abilities.

4. For the group as a whole to discuss which Decision Training tools could be used with these exercises.

5. To set in place plans to be implemented next week to try specific strategies with the students.

Т3:

1. Autonomy and confidence – In answering the question of what cognitive abilities needed to be developed T3 said "autonomy" and "confidence". (For me this was a slight misinterpretation as neither are cognitive skills per se but "states of being". I would suggest that what we want is to develop cognitive skills (eg concentration, perception, memory, logical thinking) that lead to confident and autonomous students.

2. Examples of lack of autonomy and lack of confidence – T3 gave examples of S3's lack of autonomy: not able to do her own warm ups, not being able to work on her own. She said much of this is to do with lack of confidence because she has no movement vocabulary and experience with trapeze or circus. She said she is not able to combine a technique with a choreographic idea, not able to improvise, and is not able to really distinguish between what is "good" and what is "bad" when using video feedback.

3. Performance anxiety – T3 also reported S3's stress levels went up a lot prior to the December presentation, but that in performance she managed the stress ok.

4. T3 was clearly finding it challenging balancing the expectations of the school (seeing a well performed routine showing technique at the level the school is known for and artistry) and using DT which is asking her not to be so directive. She was not sure "she was going to make it" with S3 using DT. PA said it is a difficult point in the process because using DT there is often a plateau at the beginning. He also said T3 had to balance direct and DT in a performance oriented environment and that was not easy. (In the debrief JB and PA discussed that T3 and T1 might actually need support in implementing the strategies they were suggesting and we might need to discuss our roles in the observations. If they have proposed the strategies they want to use then within the context of action research can we not help to support that even if it's just a pep talk before the session starts and a quick debrief after the session ends?)

5. T3 suggested a strategy which was to ask S3 to put together a 2 min sequence of all the techniques she knows on her own.

6. Other input from focus group members:

a. T2: T2 said with debutants it is hard at the beginning to use DT because the student doesn't have any knowledge to draw on. (In the debrief PA said we need to discuss this more with T2 – is this necessarily true? For instance it is possible to generate a bandwidth (even a really wide one with a debutant) from the moment you start teaching them even if it's just based on the experiences of the student and not knowledge based.) He also said DT is always a process of reflection to force the student

to think. (PA in the debrief said again we need to question T2 about this to see what he thinks is the purpose of making the student think).

b. T1 asked T3 did she have a technique to get S3 to make her own sequence. T3 responded that she will tell S3 to use the techniques she knows already and is confident in so it is safe. T1 suggested T3 could impose certain parameters on the process like different "colours", rhythm, or context (like the trapeze is really fragile etc).

c. PA talked about "creating references" for S3. Ways in which S3 could put down on paper different combinations of techniques and then refer to them when she was in the process of putting together the sequence. This would develop the cognitive ability of thinking ahead using hard first but not with the immediate pressure of physically performing.

d. JB suggested she could be asked to prepare a page in her journal before every class articulating in whatever ways the movements she would be exploring in class and also reflecting on the class immediately afterwards. This process of creating non action based references might promote more cognitive effort in the class, which in turn might improve her confidence when she sees the results of her efforts and might prompt her to invest more time working by herself thereby becoming more autonomous.

7. Conclusions: it was generally agreed that autonomy was the long term goal, and that developing the S3's cognitive abilities to promote more self confidence was what T3 wanted to focus on with DT. The group suggested using hard first strategies like S3 making her own sequence and creating her own references, variable and random practice were the appropriate DT tools.

T1:

1. Perception: T1 said the main cognitive ability that needed to be developed in S1 was perception.

2. Review of last session:T1 referred to the last session and also to the "artistic v technique argument" and the non technical presentation S1 did in December.

3. Current situation: T1 said this session they were working on some big techniques.

4. Gestation:T1 said S1 has a very long gestation period with ideas. He often will respond with frustration or "no" to a proposed idea and then sometimes 3 weeks later will implement it.

5. Internal feedback: He also said during performance there was a big problem with internal feedback but he didn't have a concrete reason for this.

6. NG said that S1 feels his own objectives and the objectives of the school are not compatible as evidenced by the last performance. PA said why can't he do both - combine the big techniques with his own artistic agenda? T1 indicated that was his goal this year to try to get S1 to do that.

7. Other input from focus group members:

a. PA suggested as an exercise that S1 be exposed to the work of V.E. Meyerhold particularly in respect to trying to get S1 to get out of his head and into his body to generate his performance material and use things like space, rhythm and gesture as primary elements. T1 didn't know Meyerhold's work but took the name. PA said in S1's case all his "knowledge" is controlling everything he does and is actually hindering his performance.

b. JB said what was needed were exercises that challenged S1's "certainty" about his process because it was based on a narrow band of experience. Interestingly T1 said S1 is widely experienced in performance. JB said maybe but it's a narrow band in the type of performance perhaps and also his movement language is very narrow and that he needs to be exposed to a much wider movement framework (performance art, noh, butoh, etc).T1 asked a good question: how do I do that? Because it is outside of his own experience too.

c. JB suggested that if he used exercises like Meyerhold's and also the person SL suggested last session (can you remind me?) and then see what the emotional reactions of the audience are and then reflect on those reactions instead of always starting from in his own head.

8. Conclusions: By this stage the meeting comprised just T1, PA and JB. But we agreed the cognitive ability to be developed was perception and exercises to get S1 to develop his material out of his body instead always deriving everything in his head.

Unfortunately we didn't have enough time to get to T2 so we were wondering on Friday 20th for a meeting with him to ask him about his plan for next week.

Appendix 2.3 FG 4

Partial Transcripts from FG4, Recorded in French and English (PA, SL, JB, T1, T2, T3)

Objective of meeting: to review participants' experience in the research project, what was learnt, the challenges.

T3:

T3: [00:01:55.268] The strength was more there. The knowledge of the apparatus, I think that it is perfect for someone who already has the knowledge of what they're doing. It's going to work really well for second year for example. Super. But first year for me it put us behind until January.

On answering a question about what T3 would do differently after the research project that you she would not have done before.

EF: Probably I will help the people less. To give them more autonomy and ask them to be more aware of what's happening around them. To look to read to go get information. Before I was doing that myself. I would bring videos, I would point out things [00:09:43.145]. Now with this method I feel I can ask them to do more things on their own. Before I was doing that for them. But not in the beginning of the first year. If someone is advanced enough I would say yes. But for someone who is beginning not until January. But for second year yes. But yes it helps because now I can see that she is able [00:10:33.233] to look visualise think differently.

T3: To use the tools? We used the video we used repetition and to decide between the three repetition which one was the best through sensation of the body. Because sometimes she doesn't know what was different. [00:21:37.458] But she could tell which one was easier and why.

I2: So you ask a question?

T3: Yes. Because often their body they're not conscious of it. They're going to do it three times and the three times are going to be different [00:22:08.582] but there's going to be one that's going to be cleaner more right technically but they won't be able to tell

you which one. They're going just say ' well this one was easier and they won't know why.'

I2: So then you force her to realise that through your questions? T3: Yes

[00:22:43.565]But with S3 once you ask a question the answer is nil. It's a little bit better now. [T1 arrives] So we used that what is it we used? um we give her work outside the class. I ask her 'ok what we did today you need to practice tomorrow and after tomorrow and after next class you come and you show me how you solved the problem.' Simple things. And often [00:24:02.360] she didn't have time to practice so she didn't do the homework.

I2: Physically she cannot do it? there were things that were stopping her?EF: Either there was no place or she was not allowed to but they have time to they have occassions to hook the trapeze. It's very simple and basic she can do that.[00:24:43.778] But what was good was when I was asking her she would say 'no I didn't do it.' So at least she was honest. So I told her 'now you are going to do it.' And I will come back later. So those are tools that are efficient because the student must learn to

work on their own. Otherwise the progression is not fast enough. [00:25:19.537]

T2:

T2: Me what I find interesting is the way to become conscious of the way that i was using some of the tools intuitively and some I was using a lot less. [00:11:17.565] I was not concentrating on using them. Now what T3 is saying: I can understand. In my head for decision training to be useful efficient you must use the seven tools. If you take just 5 there's something missing. [00:11:49.318] So for example this lack of baggage [vocabulary] this feeling that you have no idea of what it looks like. But if I take video I have elements of comparison I will be able to use that.

I2: The videos of somebody else.

T2: Yes videos of somebody else. Someone more advanced as models. I would be the first one to say it's underused in this school. Because we have the impression it's a waste of time. [00:12:58.525] Me what I did to go around this problem I filmed them and I gave them my camera and I asked them to go and watch outside the classes. Because we have limited amount of time blocked time with the student. [00:13:27.150] We want to maximise it as far as motor exercises go. But the video is very useful but outside the class. And then they were doing their own analysis then. And the other part that is a challenge for me to combine the different approach with learning activities. [00:13:59.638]

[00:14:57.450] So he has to learn the right technique and that's when the dilemma 'how do I teach them the right technique without explaining to him.' That's when the videos are important.

And [00:15:43.385] I liked a lot variable. Because it brings a lot of variety to develop the motor skills of the person. Once I've done that I feel I'm well equipped. Before the tendency was to say 'i know it takes this and this educative, like preparatory exercise' so you made a list and that was going well [00:16:16.628] but if I hadn't developed the body physically I don't get to my ends.

I2: So you make a difference between the educative preparatory exercises are not variable practice?

T2: It is part of variable but instead of having just of one very precise sequence because you know it works because we used it a lot. [00:17:49.095] And it works it's true. And it makes me think of ..because I remember seeing that the curve of learning is lower at the beginning and it was proved that in the long term it's been proven that it's going higher but I realise that the more people are autonomous [00:18:29.240] it's long for them to acquire the information. It's much easier to tell someone 'do this this works.' And snap you are right. It's very efficient but the retention it's not as high. Once you have raised the retention of the information [00:19:04.708] then you get to a better result.

T2: [00:43:17.727] so if I am not using the 7 tools the result wouldn't be as good or 3 or 4 I have to use the 7, and then it's to know. Do I do the 7 all at the same time ? Is there an order? Do I tell myself which tools do I start with and there is an order that could vary depending on the person. Depending on the level [he points at Elena] [00:44:02.248] but I am totally convinced there's a chronological order that [in] the majority of cases should be used. It's benefit otherwise it won't be [?] And if you would put them in order knowing that it's you may change your mind tomorrow but spontaneouI2y right now if you give me an order [00:44:42.948] The first one is variable practice that's undeniable. Random practice is not right away. I'm not in a hurry to use it. I want them to be ready to perform and I don't feel I need to use that right away. Hard first [00:45:22.963] I use it quickly because human nature respond to challenge. The question is to see up to where I use it . To not take [encourage?] bad habits. So as a teacher is to tell myself I can go up to here. After that it's dangerous but it's still a challenge for that person. And that's good because people respond to challenge [00:46:03.498]. This challenge. Then I did a variety. I did hard first and then I want them to have video models pretty soon so there is a reference because you don't want them to have bad habits because it's really hard to change after that. [00:46:51.778] So pretty soon at the beginning there are models, references it's very beneficial. After that questions I do that fairly first [early?]. Then after the question then after that I start delays on the questioning. Because then I have to make them practice [00:47:21.695] thinking. Once they've learnt how to think then I wait. I wait for them to do the reflection. But until they've learn to reflect then I ask questions. If I delay the questioning I'm not efficient. They need to get used to thinking, 'why isn't it working? why isn't it correct? I don't know yet.' So you want them [00:47:58.060] to get in the habit of doing that. Then after that I bring the random because the random is important but not at the beginning. I would put it later. So in general that would be the order.

T1:

T1: "well it was a success in a way that I discovered a whole bunch of tools that are useful. After that it's going to depend on who you're working with." FG4 (28:57)

I2: "Do you think it has changed the way you teach? Do you feel you teach differently now than before?"

T1: "Probably it has changed. I have less scruples to leave the student alone. I had a tendency to do that before. Not to direct, 'do this and that. You do this amount of repetition each day you do this and that'. FG4 (31:50)

I2: "I want to go back to obstacles that makes it difficult to appropriate those tools." T1: (48:36) well like T2 was saying it's to change your habits in pedagogy. That would be a point an issue. The other one is, like Sylvain said again, it's to go step by step little by little small doses you don't have tothere for September you completely change your pedagogy. And also the use of certain tools I am not entirely in agreement to use the 7 of the tools, maybe you can use 1, 2 or 3. Yes it would be interesting in a chronological order to insert them little by little. (49:39) After that there's probably a balance to find and all that you have to be comfortable to teach that. With this tool and that tool I am comfortable. Or with this tool I am not comfortable. Or there are tools that are not appropriate to this specific student." FG4

T1: "It depends on the background. It depends on the people you're working with. You can't use the same teaching strategy for all students." FG4 (52:05)

T1: "It depends on the teacher too. I wouldn't be comfortable to use certain tools. There are certain tools I am more comfortable with than others." FG4 (52:21)

T1: "But it's true that sometimes it was not easy to understand I was wondering if I was off the mark it felt to me pertinent to use it like that so maybe I have adapted tools. Well of course it's obvious that you're going to adapt depending on the way of thinking of each. FG4 (1:18:47)

T1: "oh yeah that was the biggest positive point in all that was to become conscious of what I was doing, of what tools I was using and why I was using them and not just I am using things by habit like, 'I don't understand why anymore but I use it.' So all this research made me think about the whys. How I could improve that. And yes it gives tools for the teaching." FG 4 (1:24:12)

Appendix 3. Samples of Observation Notes

Appendix 3.1 Samples of Observation Notes from Case Study 1

Observation O 1.16 Thursday 2nd Feb

1st 10 min improv of 5 x 2 mins sections:

(with object)

10h50 1^{st} improvisation:T1's instruction was to start with an object. S + O started with an object in hand – a ball. (it seemed 2mins for each section was short particularly for inexperienced improvisors) O seemed to be more in the moment to me, more effected by the music

 2^{nd} piece of music is beach sounds

3rd piece piano music they started to interact with each other initiated by O throwing the ball randomly and it went over to S1

4th music classical guitar, they moved away from each other again

5th music atmospheric radiohead style then a driving rhythm then it faded at the end. 11h00 discusssion in French **

11h05 2nd improvisation, without the object, taking the idea of the ball into a body part each 2 mins change the articulation , and change the colour, the colour effects how you move, you can close the eyes , 1st music electroT1 rhythm , they both started on their backs choosing a foot articulation, 2nd music atmospheric accordion clesma melancholic funereal, S1 started turning for a moment then stopped., 3rd music disjointed electroT1, I observe S1 movement is quite rigid he seems to want to know how to do release movement.

4th music rhythmic percussion , started a rhythmic dance for a moment with stops and starts and references to capoeira, I wasn't aware of the specific body part S1 was supposed to be isolating

11h15 discussion, O talked first about the proximity of the body part being isolated, further away....S1 forgot to think about a colour, O did have colours for each section. 3rd instruction the movement starting from different body parts and going to the object stomach, shoulder, elbow, wrist and finally the object. Using the object again 1st music jazz S1 responding more, 2nd music electroT1 rhythm industrial sounds, T1 telling them to remember the colour also, they moved back down to the floor, 3rd music gamelan body part elbow, 4th music classical violin started slow then got faster, (I wanted to be able to stop people in the middle of the task to get stream of consciousness stuff) 5th music up tempo, they interacted for a moment, S1 using the club in his hands rhythmically including using it like a seat, batting it, riding it. (my observation was this could have gone on longer)

11h30 discussion, comparison – moving body segments with and without the object, comparison – how the object moves when the movement is coming from the stomach and when it is coming from the hand.

T1 in French ** constraints on movement

11h40 S1 ***

11h42 O responding**

11h45 T1 talking about contraints

T1 reported to me that S1 and O don't see the connection with the improvisation and what they are doing the rest of the time in class.

Discussion O said he couldn't feel a connection between his stomach and the object, he only felt it when the movement came from the elbow ie closer to the object, T1 noted that when they were moving from the stomach the body and arm was rigid there was no connection.

His plan for next week with them is to look at the last 10 mins on video and point out some of the observatiosn,

Observation O 1.18 Thursday 9th Feb

Level 7th was booked by Howard Richard so they weren't able to do the next part of the exercise which was the energy ball exercise. So instead they looked at the last 10 mins of the video taken last week. That was moving from 5 different energy segments stomach, shoulder, elbow, wrist and then hand for each 2 mins of music. T1 pointed out that when the movement was from the stomach the arm and object was dead, or rigid.T1: the point was once you fix or you start your movement from one segment the other (segment/body part) like the object is really fixed only static, (eg) the stomach moves well but after that the object is dead, dead or totally fixed, it has no movement, discussion in French O translates: he is just saying he's (S1) on the right shoulder right now and he had kind of messed up in the beginning because he was on the left and he was like oh I was supposed to be on the right so and then he just stopped after so that's where we're at now he's on the right shoulder JB: and the thiT1's (the object) is on the left .T1: the idea during the improvisation is to start the movement from the shoulder for example but after that the movement comes through like a wave until the extremity and even further than the extremity . For us the point is to reach the object like the end of the extremity. They discuss what part they are moving from as they watch the video they agree that it is from the elbow.T1: maybe it wasn't so clear because when we spoke that the movements from the stomach or the elbow you don't have to move the elbow, the movement starts from the elbow, here (indicating the video) the elbow is clearly the extremity and we move the elbow but the elbow can move like that and then after the arm follows the rest of the body can follow the movement of the elbow.here (indicating video) we are on the wrists. They continue watching. So you did respect clearly the rule but it is too much isolated on the body segment. ..today we were supposed to work more dynamically, if you start from the stomach in a few seconds maybe very fast you go on the extremity until the object. After that you come back from the object to the stomach or to the ... JB: are you talking about the energy ball?, T1: like an energy ball circulating moving in your body more dynamically instead of here it's like very static you move your wrist, you move your elbow and the step after is to move this energy ball through all your body and to the object. From the object to the body, from the body to the object. JB: so you are going to do that next week are you?T1: probably. They look at a sequence of movements S1 does on the videoT1: This repetition could have an effect on all your body..it's like you are inspired by the movement of the wrist for example, you let the wrist do that, ok maybe it could move into another part of my body, all the body or into the object. I observe that S1 is not totally concentrating on the video in contrast to the other student. T1: in your observations the object is a handicap at first. The other student O agreed that it was hard and that the object was a handicap and

conversely when the movement was from the other extremity ie the hand the stomach was disconnected.T1: I think if we did the same exercise without an object for example the first part with your stomach I am sure you would move all your segments or your body. S1 in French (needs clean translation): if we had the object fixed on our hand then we wouldn't need to think about it ...(in English) I just said that if we do not move a lot it's because we have to make a contraction to keep the object in the hand that's why maybe when we move from the stomach we do not move the object arm any more. We should try like to tape it. JB to SR: Did you feel the same thing with the stomach and the object ? as O? When your focus comes closer to the object was it easier or not? . SR: I don't know. I think I was really focused on just moving one part so I did not really connect everything ...ok so I just have to move my elbow

T1 said that since he has been thinking about decision training watching J (artistic councillor) work (very directive). Not in a good or bad way but just noticing how she was directing every single movement of the student's piece.

My observations:

- 1. T1's use of Random Practice/Variable Practice in the Improvisation Exercise: My observation of the improvisation exercise that T1 devised to develop S1's internal referencing was that it used a mixture of random (music not planned, instructions are new for the students) and variable (the student is required to start the movement from the same body part in various ways over a 2 min period). I observed that S1 interpreted the instruction as just moving the specific body part rather than moving from that body part to the object. The other student actually interpreted the instruction more accurately than S1.
- 2. Precision of instructions: T1 could have maybe been clearer in his instruction so the student was completely clear about howT1 wanted the movement to be explored.
- **3. Delayed feedback:** I observed that T1 could have delayed his own feedback about the rigidity of the movement until after S1 had watched the video or after each 2 min section of video and asked for S1's opinion before giving his own opinion.
- 4. T1's commitment to the research process: My observation is that T1 is really thinking about ways to use the decision training tools and developing interesting exercises to provoke S1 to "get out of his head" to generate movement and ideas from "inside the body". The development of the energy ball exercise is interesting and so was S1's idea of strapping the object onto the hand to get around the contraction reflex that jugglers have when they hold the object.

Observation O 1.20 (thurs 16th Feb)

Energy ball exercise with lights off

- 1st music. ball in hand, S1 moves with bigger and more animated movements as the music progresses.
- 10h51 T1 offers an instruction do it with the energy circulating slowly through the body. T1 is also trying to feel the exercise as they are doing it.
- Music is going longer than the 2 mins from last time and T1 slowly fades it out.
- The discussion is much shorter than last time,T1 asks them to simplify the complexity,T1: you already need to do it with a lower level of complexity.

One is going to simplify it more. If it one presents the fingers of the free hand the ball is thrown to it and it catches it and after slowly one is going to represent the ball and really slowly through the segments ...(demonstrates) through my leg **S1 says something (need to get a translation). O.20 6;29

- 10h55 T1 gives the instruction to follow the energy flow by pointing with the finger of the free hand where the energy is flowing inch by inch, 2nd music (African) they seem more engaged with this than last week.
- ThenT1 interrupts with an instruction to take 8 counts for the energy to get to the ball and 8 counts for the energy to leave the ball and move through the body and end up in another body part
- With S1 it starts to get over complex again
- Debrief: T1 was pleased by the end, he said he was starting to see something of what he wanted.T1: thank you that was interesting when the 8 counts were respected ...at the beginning the energy rested a little but too long ...but with the constraint of time the object circulated rapidly ...entering and departingfinding the floor also boom (demonstrated energy going into the floor through his leg) rebounds remounts ..very different dynamically ...we will regard the video in the coming week. JB: we can look at it that week (week of the beginning of the next cycle March 5.T1: the dynamic was really hyper interesting that I wanted there ..the 1, 2, 3, 4, 5, 6,7, 8 because ...he talks to them about the ball or object bringing the energy into the body and what you do with the energy in the interior of the body, and the more and more precise the research becomes the more he can see it in their bodies. T1 asks them if they have any commentaries. S1: to do this forces me to be more precise **needs translation O.20 16:30
- T1: in the first they made it over complex so I simplified it to just tracing the energy with the finger, and then they got stuck in that so I gave the instruction 8 counts energy out of the ball, 8 counts energy into the ball.
- JB: how did you feel that went?T1: at first too much complicated the first one because I just give .. the first rule I give is only you have an energy ball . Your ball is a ball of energy catch it, imagine the ball goes inside your body and just move in your body and after that go out and this energy in your body gives the impression of the ball to go out so it could be a little throw like this or a big throw. And when you catch it's the same thing it goes inside and ... JB: that was the instruction?T1 yeah .. but few sentences .. only three sentences to say that. JB; and you felt the first one was?T1: it was too complex JB: they were complexT1: yeah JB: the perception of the instruction?T1: yeah so after that I tried to simplify the exercise. I felt it was simple but they transformed that in a very complex way. After that the academic instruction : show me with your finger the (energy) ball when the ball is on the floor in your hand and after that inside your body. After that I said that it was ...sometimes they spent a lot of time (indicates getting stuck) ...so after that I gave a time constraint. And it was really interesting for me I just start to see what I want to see for this exercise because they don't spend a lot of time in their body but I don't want to transform them into dancers but I want that they do a link between their body their arm their stomach and the object, And 1 2 3 4 5 6 7 8 (indicates the energy coming into the body) 1 2 3 4 5 6 7 8 (indicates the energy going out of the body) it was perfect . JB: so where might you take this exercise for the next cycle where do you want to take this exercise?T1: continue very simply simple simple

simple ...maybe it could be without music when they warm up in the studio: ok 8 counts you catch your diabs 1 2 3 4 5 6 7 8 and (indicates the energy going into and then coming back out of the body) then throw it again ...for when they warm up a simple trick . Maybe they , I am thinking just now freshly, maybe to start a movement a techT1al movement start from there (indicates starting from the stomach) 1 2 3 4 5 6 7 8 (indicates the movement coming out to the hands) do the ...(indicates doing a diabolo trick and then 1 2 3 4 5 6 7 8 (indicates the movement returning into the body from the hands) back into the body. JB: and this exercise is to develop what particular cognitive thing in S1?T1: maybe to more in his body instead of in his head is the cognitive ...JB: internal referencing?T1: yeah less cerebral construction JB: more feeling?T1: yeahto feel more the energy of the body and not to feel to start from reflection to do a movement but the movement for the movement JB: internal awareness?T1: yeah

My observations:

- 1. The improvisation exercise: the exercise had been developed and refined by T1 this week. He had simplified the instruction to identifying an energy object moving into and out of the body.T1 was really watching the students closely. When he saw that the students were getting complex with the instructions he intervened and adapted the instructions to make them more precise. S1 seemed more engaged with the exercise this week.
- 2. S1's gestation: as observed on previous occasions where S1's initial response to an idea is to reject it, S1 initially seemed negatively responsive to these improvisations after some gestation time he seemed more positively responsive on Thursday.

Observation 0 1.30 (Th)

- 1) Energy ball exercise (music counter tenor, baroque 5 mins)
- 2) Tracing the energy while holding the object
- 3) S1 going slowly didn't release the object like O who did a lot more movement
- 4) Then SR puts the object down and does a flurry of movement by the side of the ball
- 5) Then he picks up the object and moves
- 6) Translation of video tape?
- 7) Next music uptempo Cranberries
- 8) Much more dynamic movement, vibrations, changes of dynamic (play this back to him "what is going on in your head?"
- 9) When the music slowed for the middle 8 they both went slow then SR went up on his hands momentarily
- 10) Then they went fast again when the beat came back in
- 11) Stretchy sock movement while he is stretching out the sock
- 12) This observation turns into DBT 1.04
- 13) Run through he wants to perform this with the audience in a circle
- 14) My observation of the run was it was like someone marking it after the animation of the warm up.

Appendix 4. Samples of Letters of Consent Appendix 4.1 Sample of Letter of Consent—Teachers



Research Ethics Office For all queries, please contact:

Research Ethics Officer Edith Cowan University 270 Joondalup Drive JOONDALUP WA 6027 Phone: 6304 2170 Fax: 6304 2661 Email: research.ethics@ecu.edu.au



Comité d'Éthique de la recherche Pour toutes questions s'il vous plaît contactez: Direction des études École nationale de cirque 8181, 2^e Avenue Montréal (Québec) Canada H1Z 4N9 Téléphone : +1 514 982-0859 Sans frais au Canada : 1 800 267-0859 Télécopieur : +1 514 982-6025 Email : darendasova@enc.qc.ca

The development of expertise in the circus arts: an investigation into the effects of decision training practice on teaching methodology, learning and performance outcomes in the circus arts over the long term.

Jon Burtt, MA Doctoral Proposal Faculty of Education and the Arts Edith Cowan University

L'introduction du *Decision Training* dans la formation supérieure en arts du cirque et ses effets sur les stratégies d'enseignement, l'apprentissage et la performance.

PREP (Programme de Recherche et d'Expérimentation Pédagogiques), M.E.L.S., Québec. Dr. Sylvain Lafortune, PhD, Jon Burtt, MA, Patrice Aubertin, BAppSci.

Research team contact details:

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Dr Sylvain Lafortune, head researcher (PREP) associate supervisor (for PhD), National Circus School, Montreal, Canada. ph: +1 514 982 0859, e: <u>lafortunes@videotron.ca</u>.

Patrice Aubertin, project manager and researcher (PREP), National Circus School, Montreal, Canada. ph: +1 514 982 0859 ext 262, e: <u>paubertin@enc.qc.ca</u>.

Other associated researchers contact details:

A/Prof Maggi Phillips, supervisor (for PhD), WAAPA, Faculty of Education and the Arts, Edith Cowan University, Perth, Western Australia. ph: +61 8 9370 6129, e: maggi.phillips@ecu.edu.au.

Dr Jean-Pierre Brunelle, project advisor (PREP), Faculty of Physical Education and Sport, University of Sherbrooke, Quebec, Canada. ph: +1 819 821 8000, e: doyen.feps@USherbrooke.ca.

Dear [teacher's name],

This informed letter of consent is to confirm your involvement in the decision training practice study at the National Circus School, Montreal from August 2011 to April 2012.

In signing this letter you confirm that:

- you have been provided with a copy of the Information Letter explaining the research study and the ethics protocols document,
- you are 18 years of age or over,
- you have read and understood the information provided,
- you are aware that the research team will update you regarding any changes as and when they may occur,
- have been given the opportunity to ask questions and have had any questions answered to your satisfaction and that you are aware that you will continue to have opportunities to ask questions throughout the duration of the research project,
- are aware that if you have any additional questions you can contact the research team,
- you understand that participation in the research project will involve:

1) 3 x 1hr sessions each week in 4 separate periods or "cycles" from Aug 29, 2011 to April 13, 2012. The first cycle being 5 weeks including an orientation period, the next 3 cycles being 6 weeks each, 23 weeks in total.

2) One-to-one interviews at regular intervals, weekly debriefing sessions, and the group discussions (focus groups) at the end of each study cycle.

3) Extra work outside of your normal teaching schedule – for the period Aug 25, 2011 (first orientation meeting) to April 18, 2012 (final group meeting) the total hours you are committing to (outside of the 3 weekly teaching sessions) is 38.5h, comprised of 23h of weekly debriefs, 6h of one-to-one interviews conducted at the beginning, middle and end of each cycle, and 9.5h of group meetings.

4) Observation, documentation and analysis of your involvement in various formats, including video, audio, written notes, and other documentation.

5) Your commitment to the action-research model for the project which will require you to collaborate with the research team, to provide considered and honest feedback to the process, to adhere to the ethics protocols and time-table outlined for the project and to be an active and engaged participant to the best of your abilities.

- you understand that the information provided will be kept confidential, and that the identity of participants will not be disclosed without consent.
- you understand that information provided will only be used for the purposes of this research project, conference papers and publications resulting from the

research and any public presentations of the research and that you understand how the information is to be used,

- you understand that you are free to withdraw from further participation at any time, without explanation or penalty,
- you freely agree to participate in the project,
- specifically, with regard to audiovisual recording, you are aware that audiovisual recording of interviews, training sessions, rehearsals and focus groups will be part of the data collection procedures and give consent to be recorded,
- you consent to data from the project being used in public presentations and that you will be consulted by the research team as to the details of the presentation, what data will be used and in what context. You also understand that your confidentiality will be maintained, however you are also aware that some of the data will be in audio visual form and identification of study participants may be possible,
- you confirm that you are aware and give your consent to the following:

1) that audiovisual data, whether it be in digital or tape format will be stored on three computers, one based at the National Circus School under the supervision of Patrice Aubertin, and the personal computers of Jon Burtt and Sylvain Lafortune.

2) the central data collection sourced from one-to-one interviews will be stored in the HyperResearch software on the personal computer of researcher Jon Burtt.

3) all protocols protecting the confidentiality of the participants will be observed including coded rather than named data files, and password protection.

4) any non-digital materials will be kept in a locked cabinet in the office of Patrice Aubertin.

5) the original sourced data will be accessible by the three members of the research team Jon Burtt, Sylvain Lafortune and Patrice Aubertin,

6) the possible use of the data in a similar or related project can only happen with your consent,

7) in the possible use of the data in a similar or related project the maintained data will be deidentified (all interconnecting codes will be erased),

8) access will only be given to this data for similar or related research, after the combined approvals from yourself, the research team, the Ethics authorities of ECU and the National Circus School.

9) data will only be permanently destroyed upon combined approvals from the research team, the Ethics authorities of ECU and the National Circus School.

I ,, of,,	agree	to	the	terms	of	this	informed	letter	of
consent.									
Signed, thisday of		,	2011	l, at					

Teacher's name, signature and contact details.

Appendix 4.2 Sample of Letter of Consent—Students



Research Ethics Office

For all queries, please contact:

Research Ethics Officer Edith Cowan University 270 Joondalup Drive JOONDALUP WA 6027 Phone: 6304 2170 Fax: 6304 2661 Email: research.ethics@ecu.edu.au



Comité d'Éthique de la recherche

Pour toutes questions s'il vous plaît contactez: Direction des études École nationale de cirque 8181, 2^e Avenue Montréal (Québec) Canada H1Z 4N9 Téléphone : +1 514 982-0859 Sans frais au Canada : 1 800 267-0859 Télécopieur : +1 514 982-6025 Email : darendasova@enc.qc.ca

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Dr Jean-Pierre Brunelle, project advisor (PREP), Faculty of Physical Education and Sport, University of Sherbrooke, Quebec, Canada. ph: +1 819 821 8000, e: doyen.feps@USherbrooke.ca.

Dear [Student's name],

This informed letter of consent is to confirm your involvement in the decision training practice study at the National Circus School, Montreal from August 2011 to April 2012.

In signing this letter you confirm that:

- you have been provided with a copy of the information letter (explaining the research study) and the ethics protocols document,
- you are 18 years of age or over,
- you have read and understood the information provided,
- you are aware that the research team will update you regarding any changes as and when they may occur,
- you have been given the opportunity to ask questions and have had any questions answered to your satisfaction and that you are aware that you will continue to have opportunities to ask questions throughout the duration of the research project,
- you are aware that if you have any additional questions you can contact the research team,
- you will abide by the rules and regulations for students laid down by the École Nationale de Cirque,
- you understand that participation in the research project will involve:

1) 3 x 1hr sessions each week in 4 separate periods or "cycles" from Aug 29, 2011 to April 13, 2012. The first cycle being 5 weeks including an orientation period, the next 3 cycles being 6 weeks each, 23 weeks in total.

2) One-to-one interviews at regular intervals, weekly debriefing sessions, and the group discussions (focus groups) at the end of each study cycle.

3) Extra work outside of your normal training schedule – for the period Sept 1, 2011 (first orientation meeting) to April 18, 2012 (final group meeting) the total hours you are committing to (outside of the 3 weekly training sessions) is 38.5h, comprised of 23h of weekly debriefs, 6h of one-to-one interviews conducted at the beginning, middle and end of each cycle, and 9.5h of group meetings.

4) Observation, documentation and analysis of your involvement in various formats, including video, audio, written notes, and other documentation.

5) Your commitment to the action-research model for the project which will require you to collaborate with the research team, to provide considered and honest feedback to the process, to adhere to the ethics protocols and time-table outlined for the project and to be an active and engaged participant to the best of your abilities.

• you understand that the information provided will be kept confidential, and that the identity of participants will not be disclosed without consent.

- you give your consent to the research team to access your assessments and evaluation reports undertaken by the National Circus School for comparative purposes, understanding that this data will be coded and remain anonymous,
- you understand that information provided will only be used for the purposes of this research project, conference papers and publications resulting from the research and any public presentations of the research and that you understand how the information is to be used,
- you understand that you are free to withdraw from further participation at any time, without explanation or penalty,
- you freely agree to participate in the project,
- specifically, with regard to audiovisual recording, you are aware that audiovisual recording of interviews, training sessions, rehearsals and focus groups will be part of the data collection procedures and give consent to be recorded,
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2) the central data collection sourced from one-to-one interviews will be stored in the HyperResearch software on the personal computer of chief researcher Jon Burtt.

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4) any non-digital materials will be kept in a locked cabinet in the office of Patrice Aubertin.

5) the original sourced data will be accessible by the three members of the research team Jon Burtt, Sylvain Lafortune and Patrice Aubertin,

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8) access will only be given to this data for similar or related research, after the combined approvals from yourself, the research team, the Ethics authorities of ECU and the National Circus School.

9) data will only be permanently destroyed upon combined approvals from the research team, the Ethics authorities of ECU and the National Circus School.

I ,...., of,...., agree to the terms of this informed letter of consent.

Signed, thisday of, 2011, at.....

Student name and signature + contact details.