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Digital enhancement of senior secondary dance assessment

Maria Gamble

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Digital Enhancement of Senior Secondary Dance Assessment

Submitted in fulfilment of the degree of
Doctor of Philosophy

Maria Gamble

**School of Education
Edith Cowan University**

2021

USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

Abstract

This research examined the use and effects of digital technology in supporting and enhancing practical high stakes assessments in a senior secondary dance course in Western Australia (WA). The participants comprised twenty students from one school who were enrolled in ATAR Dance for 2016/17 and ten WA secondary dance education experts. A mixed method embedded design allowed for the analysis of both qualitative and quantitative results to gain perspective and understanding of using digital technology to facilitate the current Western Australia Certificate of Education (WACE)/Australia Tertiary Admissions Rank (ATAR) dance examination as well as the preparation for it and marking of it. An existing assessment application prototype from Edith Cowan University was used and further developed into the dance assessment application (the DAapp) in the study.

Student participants were asked to perform their usual school based practical dance assessment, whilst the markers were asked to assess the performances in either live (traditional format of examination) or digital (using the application to view the captured performances) contexts. An alternate interview was also administered to the students as part of a workshop where they (and their classroom teacher) explored the ways in which the technology might be used to support the examination, the preparation for it and marking of it. The study was enriched by a survey and focus group interviews.

Amongst the participants was a shared desire to use technology where possible to support and enhance learning as well as increase a shared understanding of the assessment challenges. While the teachers and markers were bound by historical practices, viewpoints, and the dominant summative model, they were willing to explore new possibilities. Not only does this research contribute to an under researched area of assessment, it provides strategies to enhance the preparation of and enactment of assessment in dance performance.

Declaration

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

i) Incorporate without acknowledgment any material previously submitted for 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.

25/03/2021



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Glossary of Acronyms

ACARA	Australian Curriculum Assessment and Reporting Authority
AI	Artificial Intelligence
A Level	Advanced Level
AR	Augmented Reality
ATAR	Australian Tertiary Admission Rank
AQA	Assessment and Qualifications Alliance
CSaLT	Centre for Schooling and Learning Technologies
DAapp	Dance Assessment Application
ECU	Edith Cowan University
GCSE	General Certificate of School Education
HSC	High School Certificate (New South Wales)
IBO	International Baccalaureate Organisation
ISTD	Imperial Society of Teachers of Dancing
MR	Mixed Reality
OSC	Original Solo Composition
PISA	Program for International Student Assessment
RAD	Royal Academy of Dance
RES	Researcher
SCSA	School Curriculum Standards Authority (of Western Australia)
SS	Set Solo
VCE	Victorian Certificate of Education

VR	Virtual Reality
WA	Western Australia
WACE	Western Australian Certificate of Education

Chapter 1: Introduction

Tradition and culture in dance span many thousands of years, yet change is something which has been undertaken throughout history with regard to modern, postmodern and contemporary dance (Burt, 2004; Carter & O'Shea, 2010). Much of that change was founded and initiated from external influences like trade, technology and the colonial powers (Siegel, 1998). The very nature of modern contemporary dance explores the boundaries of innovation and strives to produce new and shifting aesthetics. Experiments in the post-modern era of contemporary dance (1960s) began to challenge and question notions of established traditions of the modern dance era (Banes, 1987; Burt, 2004) and by the late 90s and into the millennia, further connections of the relationship between technology and the dancing body developed, encompassing the practice of virtual embodiment and interactivity (Birringer, 2002; Broadhurst & Machon, 2006) and multidisciplinary collaborations (Carter & O'Shea, 2010). This kind of dance-tech fusion is apparent world-wide. The culmination of both cutting edge dance and technology within popular culture now push the boundaries of a new dimension through interactive performance and audience engagement. Universities around the world in recent years have seen an increase in their strategic vision to enhance the use of technology into their teaching of dance and take advantage of online multimedia technologies to be able to connect, share and create, where developments in this arena indicate that the relationship between technology, the body and the choreography are now often used as an integral part of the choreographic process and performance (Li et al., 2018). The implications for Contemporary Dance through continued exploration of trans-media productions is somewhat monumental and an area that arguably will become the continued direction in dance and ultimately, part of dance in secondary education.

Changing aesthetics, intercultural choreography, the relationship dance has with other disciplines, and collaborative works of art and dance within education are all progressions made in the 21st century (Butterworth & Wildschut, 2009). Over the last

few years, dance is viewed more online as oppose to live performances (Enoch, 2017). For some time, there has been a push in the professional dance world to reach a wider viewing audience, and particularly during the time of the global pandemic, live streaming and easy access to digital performance files were made available to students, educational institutions and the wider community. In Australia, companies such as Bangarra Dance Theatre, Australian Dance Theatre and The Australian Ballet all performed and created during a digital season. The Merce Cunningham Trust, Ailey All Access, The Trisha Brown Company, Marquee TV and PlayBAC were all American dance companies or streaming platforms for the Arts which made their works widely available through increasing their online access or lifting fees (Burke, 2020). One Dance UK also offered youth dancers, their educators and leaders an opportunity to create, learn from professional artists via masterclasses, write about works and share their performances as part of U.Dance Digital, 2020 (OneDanceUk, 2020). Thus, for the current and future generations of dance learners and educators, the relationship between the body, dance, education, audience engagement, and technology, becomes vastly different and will continue to significantly shift compared to previous generations.

Learners, audiences, artists and educators consistently strive to articulate about dance and its social, cultural and historical contexts. Dance educators at the forefront of their profession are required to make the links to the professional industry and socio-cultural contexts and infuse it into their practice. Technology spans across dance education, professional dance practice and is a part of contemporary culture. With continual shifts in both technology and culture, bridging the gaps to secondary school education is continually required. How fast this integrative step infiltrates this paradigm remains under exploration and development for secondary dance education in Australia, with questions around assessment and how it fits into this domain, remain. Albeit brief, this introduction to dance and technology is purely to indicate the history and continued progression dance has with technology and the level to which students are exposed to it.

Context of the Study

The assessment of dance in formal settings takes place in various educational institutions around the world. Some countries still do not value the arts and dance in education, and many have had to fight for their place and retention in the national curriculum. In the last few years in Australia, the arts has enjoyed increased standing and support in the curriculum (Austalian Curriculum Assessment and Reporting Authority, 2014) (Australian Curriculum Assessment and Reporting Authority [ACARA]). The Western Australian Certificate of Education (WACE) dance course has proved to be successful for secondary school students undertaking high-stakes examination for their Australian Tertiary Admission Ranking (ATAR). The year 11 and 12 ATAR dance course consists of both external and school-based assessments with considerable moderation processes determining the final grades and overall rankings (School Curriculum and Standards Authority, 2020). Given my experience as a secondary dance teacher and examiner, I set out to examine a new framework and model of practical assessment in dance to determine how technology can best support assessment, and by extension, enhance the output of all stakeholders – the students, teachers, examiners and markers involved. As an advocate and avid supporter of dance in WA (and beyond) and having an understanding and desire to support and maintain the evolution of dance in education, the investigation was not intended as a criticism of the course or exam; but rather, placed them at the centre of the inquiry as a mechanism for exploring issues around technology, dance, assessment, curriculum, and societal influences.

My emic perspective is relevant to the initial conceptualisation of the study, where an overt engagement with the needs of the modern learner and adolescent developmental profile was understood in context of the demands of the curriculum and rapid changes taking place in society. Thus, challenges to the status quo and exploring the possibilities of a collaborative and technologically enhanced environment was at the forefront of my thinking. I was aware that with the rapidly changing educational landscape and the expectation to infiltrate technology into pedagogic practice, that no change or challenge to the status quo may compound the surrounding issues further.

The Centre for Schooling and Learning Technologies (CSaLT) at Edith Cowan University in Perth, WA, led the way by identifying the need for technology in assessment, in particular, digital summative assessment for secondary subjects taught in WA (Campbell, 2013; Newhouse, 2011; Williams & Newhouse, 2013; Wren et al., 2013). Their leading research unveiled strong evidence in favour of digital assessment of practical subjects in senior secondary courses. Penney, Jones, Newhouse, and Campbell (2011) found that “the digital outputs of the assessment task have been regarded by teachers, assessors and students as valid representations of performance” (p. 20). In addition, Newhouse (2012) claimed “there is a critical need for research into the use of digital forms of assessment on complex tasks that are feasible within schools” (p. 1). His conclusion stemmed from a belief that digital technologies could capture more complex performances and harness higher-order thinking skills. Newhouse (2011) referred to the concerns of educators, participants, leaders, and community members in relation to feasibility, cost, reliability and technical issues associated with digital summative assessment. However, he believed these issues mainly stemmed from psychological, organisational, political, and cultural influences underpinned by a lack of understanding and knowledge and concluded that more compelling research was necessary.

The current investigation began in 2015. After 12 years’ experience with assessment, moderation, teaching, curriculum development, and dance examinations in the UK and Australia, I became acutely aware of the need to equip teachers with appropriate tools for enhancing teaching, learning and assessment, supported by ICT/mobile technology. My interest was also piqued by recent investments in summative assessment of practical subjects in WA that had sparked a profusion of digital applications, some of which took the entire assessment cycle into account. At the time, Edith Cowan University was also involved in collaborations with other Australian universities, investigating online processes and platforms for high-stakes examinations (Hillier et al., 2019). Their work had been at the forefront of educational research for some time and reinforced the amalgamation of performance assessment and technology.

Within the educational context of dance in WA, there is also a requirement for pedagogic dance practice in senior secondary education to utilise technology to enhance reflective learning and support creative output. Learning contexts are intended to reflect students' cultural understanding to foster the production of unique work. By researching issues and events which influence dance, students are required to examine their own beliefs. By considering how dance is shaped by society and its values, they develop awareness of the impact of new technologies in dance, with digital literacy in dance being fundamental to learning, communicating and responding (School Curriculum and Standards Authority [SCSA], 2018).

Despite this, assessment in dance remains free from any reference to technology and relies heavily on common assessment practices such as a performance in front of a panel, thus a possible misalignment in the form of the assessment and the requirements of the course. This is mainly because the incumbent form of assessment dictates the delivery of the content. In light of this, the questions below continually arose during my practice and ultimately led to the current study:

- Can the use of technology explored in the professional dance industry, the rise of social media, and current educational research on technology and assessment influence and inform secondary educational dance practice?
- Can technology provide innovative, authentic, accessible, and reliable ways of teaching, learning, and assessing dance in the technological era?
- Exactly what is required to enact the next progressive step of dance in education?
- Is it time to embrace technology, rather than resist?
- Can technology support, not detract from the body?
- Can performances be reliably and authentically captured to support live performance examinations?

In addition to exploring the strengths and limitations of digital technology in dance examinations, the research also examined whether and how digital technology

enhanced assessment objectives. In this study, technology was used to supplement the existing assessment method, not replace it.

Rationale

For assessment to be aligned with culturally relevant pedagogy, considerations of embedding technology to support the desired curriculum of the 21st Century is an area underexplored for dance and the assessment of high stakes dance performance and the formative approach which supports it. A discord is therefore implied, when dance examinations, or the preparation for them, have no explicit use of technology to assist students or educators.

With the current drive in education policy and preferred practice for digital literacies in the dance curriculum (Austalian Curriculum Assessment and Reporting Authority, 2014; School Curriculum and Standards Authority, 2016a) there were reasonable grounds to believe that a digital assessment format not only could support this requirement but also needed to. In addition, with regard to current teaching standards, teachers should be able to design, assess and implement ICT into their practice. This research explored embodiments such as digital literacy, effective use of ICT and higher order thinking skills, whilst exploiting the recent investments made in Australian schools to increase digital resources and infrastructure. An educational intervention that facilitates students' understanding of technology as a powerful information gathering, collaborative and reflective tool, make a significant contribution to teachers' and students' digital literacy capability if supported with adequate educational content as enshrined by the WA K-12 curriculum - General Capabilities (2014b). By uncovering the strengths and limitations to the designed approach and use of developed technology, my optimism and possible bias are somewhat bound.

Despite the recent increased potential for uses of technology within all subjects (including dance) in the school classroom, teachers and their own training, experiences and beliefs, influence the implementation of digital literacies in dance. This notion, although not relevant to all teachers, may impact on the learning potential of students. By acquiring 21st century skills and beginning to transform teaching, learning and assessment methodologies, valuable insights were gained into how technology

facilitated experiences can truly support learning and assessment, rather than just providing a tool for recording, presenting or finding information.

Learning that embodies culture, learner wellbeing, their personal experience and knowledge is considered a constructivist pedagogical approach (Kay & Kibble, 2016). Constructivist approaches to teaching and learning also often include; collaborative construction of knowledge, social interaction, scaffolding, reflection, access to modelled process and expert performance, and communication of one's own beliefs and values (Baird & Love, 2003). Today's learners live in a world facilitated by technology, where young people are exposed to media and linked into a global community more than ever before, drawing their values and identity through a hyper connected world (Besley, 2002). It is considered normal practice to actively learn, communicate and participate in events both on a local and global scale through collaborative learning platforms such as Blackboards Collaborate, Google classrooms, Microsoft teams and the like and social media platforms such as Twitter, Facebook, Tik Tok, Instagram and otherwise (Stabile & Ershler, 2016). Thus, the current teenage Generation Z, the modern learner and subsequent generations will use technology to communicate and engage with their peers and learn collaboratively, which is undoubtedly a mainstay, with their lived perspective in stark contrast to any other previous generations (Dorsey, 2015).

To further the notion of the modern learner and how they learn best; within a constructivist framework, learning and assessment were considered as both a process and a product. The overarching framework for learning and assessment was also used to support the adolescent learner and their needs as they go through a process of neurological change (Churchill, 2019). Studies in neuroscience reveal that as the adolescent brain develops, it is the emotional and survival part of the brain that develops fastest and is somewhat dominant in an adolescent response. Thus, if the emotional part of the brain perceives relevancy, currency and engages sensory motor experiences, learning is enhanced (Davis, 2001; Nelson et al., 2006). These types of experiences have been linked to cognition and learning, which is significant for adolescents given the changes their brains undergo during such time. However, there is also evidence to support the role of emotion during learning and assessment, which can also negatively impact a person's ability to process information when subjected to an

environment that produces fear and anxiety. This is particularly relevant to an adolescent who is driven by an emotional response (Caine & Caine, 2005; Goleman, 2006; LeDoux, 1997). The limbic system, responsible for the emotional response of the brain, actually has the capacity to shut down a person's ability to think clearly and limit cognitive process if they are subjected to an environment in which they are fearful and anxious (Lupien et al., 2007; McEwen & Lasley, 2002). Downshifting is a term given to this situation by researchers, because access to creativity, higher order thinking and usual cognitive functioning is lost, so that individuals can cope with the demands of their experience (Caine & Caine, 2005; Churchill, 2019). It was therefore necessary to uncover ways in which learners were provided with an opportunity to critically engage in a response during high stakes assessment, rather than being exposed to stress, fear and anxiety which hinders cognitive functioning.

The approach to a more progressive style of education reinforced this piece of research and the profile of the modern learner in support of the rationale and problems with prior practice. Constructivism was therefore a relevant theme and pedagogical approach in respect of how students now learn, collaboratively in a technologically enhanced environment, in support of providing an environment which is not only more relevant and engaging but also less stressful. Contemporary learners are significantly different to their predecessors and thus, technology-enabled approaches to learning and critical reflection are essential in the contemporary classroom. Authentic dance assessment required the integration of ICT as an integral part of the curriculum and pedagogy.

The purpose of the research was to provide the modern learner with an immersive and collaborative experience, which ultimately supports critical thinking and 21st century skill development. Not only this, the research called for the perspectives of the adolescents, their teachers, the examiners and the curriculum specialists to support any notion for change. A theoretically supported basis for inquiry also contributes to providing young people and the modern teenaged learner with an engaging and relevant education that they deserve (Bennett & Maton, 2010).

The findings from this research not only inform further research into pedagogic practice, but also support teachers to effectively implement ICT in classroom-based activities and formative assessments, regardless of the findings for summative assessment in dance. Altering the summative structuring of ATAR examinations is pretty much impossible at this level. The intention is to enhance assessment, which I believe should necessarily be more formative rather than summative and thus, essentially challenge current protocol of the final *on the spot* assessment. However, although an acknowledgement of this has been highlighted, it is in fact, part of a larger problem with curriculum, standardisation, state-based limitations, and not assessments alone.

This study sought to investigate how digital technology can facilitate the preparation and marking of practical dance exams. With this in mind, an existing application prototype at Edith Cowan University (ECU) was modified to develop the Dance Assessment Application (DAapp) as a model for examining ATAR Dance. The application was designed to enable a new teaching, learning and assessment method for dance examinations and marking, and determine ways in which mobile technology can support summative assessment, and ultimately, inform pedagogic practice. To obtain a complete picture, it was vital to understand the perspectives of all stakeholders, comprised of students, teachers, markers, examiners, and curriculum specialists.

Significance

This is the first known study to specifically investigate summative assessment of dance performances in high-stakes examinations. It explored digital facilitation of final assessments, as well as the implications for formative practice. The research is relevant because currently, examinations adhere to outdated 20th century practices at a time when advances in technology have significantly altered the landscape.

Today, there is increased understanding about the strengths and limitations of digital technology in practical dance examinations and its translation into other fields. Critical thinking, creativity, and reflective practice can be achieved with ICT embedded in school-based learning and assessment processes, and this research recommends strategies to meet those objectives. It offers practical solutions to address the current disconnect between the practical components of examinations and marking.

The existing scope for strengthening professional practice in dance in educational settings created an opportunity for the voices of those who predominantly impact and shape assessment to be heard. Previous research on assessment of practical and arts subjects highlighted the need for further studies in relatable fields of education (Williams & Newhouse, 2013). It is vital for contemporary pedagogical practices to keep abreast of the rapid pace of change and incorporate innovative methods of assessment (Redecker & Johannessen, 2013). Educators and students alike have been shown to be positively influenced by these changes. Collaborative learning environments and digital forms of assessment have also been widely accepted as authentic and reliable (Masters, 2013) representations of student work, and for creating a shared understanding of the processes involved.

The topic chosen for this study is aligned to my long-standing practice as a senior school dance educator. This emic insider perspective intersects lived and embodied experience in the dance classroom with a deep appreciation of the tensions between creative process and high stakes summative exam-based assessment practice. In summary, issues associated with marking, engagement, reflection, and perceptions of summative and formative assessment, seen through a 21st century lens, provided the inspiration for this study on digitising dance assessment, emphasising its strengths and limitations along the way - an area currently under researched.

Statement of the Problem

The benefit of digital representation of student dance performances is that it can be viewed from anywhere in the world, by multiple markers, at different times, and for various purposes, such as online moderation, examiner training, and teacher education. Moreover, digital storage and live streaming are cost effective (Masters, 2013). Digital representations are also beneficial for students and teachers who live and work remotely, as well as professional development that would otherwise be costly and time-consuming in WA, given its vast expanse of 2.5 million km².

Mobile technology enhances dance assessment for students by allowing them to record, edit, create and submit audio files, review recordings, access and submit portfolios, and view text and pictures. Some scholars of dance have explored embedding

progressive assessment rubrics in dance (Milling & Green, 2014); whilst more recent educational platforms such as Flipgrid, offer opportunities for students to connect with their peers and share their learning. Video-conferencing platforms such as Zoom and Microsoft Teams offer ways for multiple people to view performances in real time.

The ongoing developmental aspects of performance, technique and creative skills in dance are common features within dance education. This style of learning and skill development also requires authentic forms of assessment which do not completely oppose the core of the discipline itself with a unilateral approach to assessment. Collaboration in dance alongside mobile technology within teaching and learning of secondary education also supports collaboration to the wider educational field and the community at large. As significant shifts in the educational landscape continue to gain momentum, alongside the impact technology is having on dance education during the global pandemic, there is now a demand for dance in its digital presence to not only support learners and educators in their endeavours to extend their skills and craft and maintain a connection with their audience but also for educators to be able to assess their students in an authentic and reliable manner.

For the external assessment and moderation of dance in other countries, the International Baccalaureate Organisation (IBO) and General Certificate of Secondary Education (GCSE) in the UK, assessment and moderation of students' practical performance is videoed and mailed off for external moderation and assessment. However, anecdotally, there have been issues with poor-quality recordings. Ultimately, the success of digitally enhanced dance assessment in Australia depends on the belief of those involved and that value and worth is contextually added.

From my own experience as a performer (and anecdotal evidence gained through peers and students), dance exams feel nothing like an actual performance and cannot be compared to a staged performance for audience enjoyment. Being examined and assessed on technical and creative skills right before being interviewed is a very different, and often unpleasant, experience that bears little resemblance to the enjoyment of performing on stage. At the end of the day, context and feelings are interlinked and can impact on performance.

Teacher education and ongoing professional development are vital for maintaining standards and meeting the demands of the curriculum. In WA, training of new dance teachers in secondary education only qualifies them to teach students dance up to Year 10 as a minor subject in the Bachelor of Education. Major subjects and training in upper school pedagogy for high-stakes assessment form another subject area. Only students who undertake a Master of Teaching have the opportunity to specialise in dance as a major subject and are simultaneously educated in upper secondary pedagogy and the ATAR Dance course. Therefore, adequate teacher education, particularly for the ATAR examination, is not provided for all early career educators of dance in a senior secondary context, although many go on to teach in that domain.

The WACE (now ATAR) dance examination was first introduced in 2009 and numerous teachers who qualified with a major in another field are delivering the course. While there are some excellent teachers of dance delivering the course successfully, I believe additional support and training is needed for those who wish to specialise in upper secondary dance education. The School Curriculum and Standards Authority (SCSA) of Western Australia offers teachers the following:

There are professional development seminars and moderation days in place within the dance sector to ensure teachers understand how to mark the dance course. To achieve comparability, the School Curriculum and Standards Authority provides:

A quality syllabus for each course unit, which clearly specifies the content and assessment requirements.

Grade descriptors, which are the criteria for assigning grades for each course unit.

Seminars/workshops for teachers to enhance understanding of the syllabus, assessment requirements and course standards.

A moderation process involving consensus moderation meetings, small-group moderation partnerships and a school moderation program.

Quality assessment support materials for teachers which are available from the course page on the Authority extranet.

The Authority provides a seminar during Term 1 each year for:

- Schools that are offering a course for the first time.
- Schools that are reintroducing a course for the first time.
- Teachers delivering one or more WACE courses for the first time (e.g., graduate teachers, teachers who have not previously taught Year 11 or Year 12, and teachers whose past experience has been interstate or overseas) SCSA (2020).

The above initiatives represent important opportunities for professional development and providing dance teachers with knowledge, skills and understanding to deliver the ATAR dance course. However, there are limitations to the level of training available for marking the practical components of the examination. The school-based practical dance assessments are modelled on the final exam where only the markers (and not the school teachers) receive assessment training. Specific training on how to mark practical exams with marking keys is not easily accessible by school teachers, who tend to learn by marking and moderating with other teachers from other schools.

While extensive training is available to markers of the ATAR dance examinations, the subjective nature of the subject often results in varied responses to and outcomes for student performances and it takes time for equitable and consistent application and use of the analytic marking key to manifest – the zero tolerance (markers must agree on a score) for each criterion compounding the issue.

Anyone who has been involved in a dance exam knows that most examiners write down comments during the performance, which are subsequently used as feedback and to inform marking. However, the likelihood of missing parts of a performance while writing down notes is high, and can lead to incongruencies between examiner scores, in

turn, affecting fairness and reliability (Fitzpatrick & Morrison, 1971). In WA, school dance exams replicate the final ATAR dance examination, so large discrepancies between school and exam marks could potentially signal a lack of teacher knowledge and/or understanding of accurate and consistent marking. The use of ICT to support moderation, training and the taught curriculum requires development to provide easy access for remote educators, teacher education, and continued support for students and teachers. There are numerous methods and applications to assist with this, however, a succinct and specific model is yet to be adopted.

Table 1.1 below outlines each section of the WACE dance examination since 2009 up to the present day (School Curriculum and Standards Authority, 2018, p. 15). It highlights the variety of complex skills required for the dance examination in a tight timeframe – namely, technique, performance, choreography, fitness, memory, and improvisation (this list is not exhaustive). In addition, candidates must be able to articulate the choices they made in relation to their structured improvisation performance (Performance 3), the preparation for their original solo composition (Performance 1), and the set solo (Performance 2) during their interview with examiners. This demanding physical and cognitive load is compressed into a final 25-minute evaluation model that serves as a snapshot of achievement.

Table 1.1 ATAR Dance Performance Examination Design Brief

Section	Supporting Information
Performance 1 Original solo composition in genre of choice 35% of the practical examination Preparation: 60 seconds Performance duration: 1½ – 3 minutes	The candidate will perform an original solo composition in their choice of genre. On entry, the candidate will be asked to declare any props to be used during the performance. The candidate will commence the original solo composition within 60 seconds of entering the examination room.
Performance 2 Set Solo 35% of the practical examination Preparation: 90 seconds Performance duration: 2 - 4 minutes	The candidate will have 90 seconds to prepare for Performance 2. This preparation time can include time for organisation of the space and attire. The candidate will perform the set solo which is in the contemporary genre.
Performance 3 Structured improvisation 20% of the practical examination Preparation: 7 minutes Performance duration: 30 seconds – 2 minutes	The markers will provide suggestions for Performance 3, the structured improvisation. The candidate will have 7 minutes to prepare a structured improvisation which is based on the markers' suggestions in relation to Performance 1 and/or Performance 2.
Interview 10% of the practical examination Duration: approximately 4 minutes	The candidate will be asked up to three questions relating to Performance 1, Performance 2 and/or Performance 3. In their answers, the candidate can describe, explain and analyse dance processes such as improvisation, choreography and/or rehearsal; experiential anatomy; safe and healthy dance as well as the artistic choices made in regard to their performances.

Prior to this investigation, the results and statistics of WACE dance from 2011 – 2014 were examined to determine whether any other areas, aside from generic marking and teaching of dance, could benefit from digital enhancement. The table below shows the mean for each part of the practical examinations from 2011 – 2014 (SCSA, (2011); SCSA, (2012); SCSA, (2013); SCSA, (2014a)).

Table 1.2 Mean Average Scores for WACE Dance 2011-2014

	2011	2012	2013	2014
Performance 1 Choreography (35% of practical exam)	67.10%	71.99%	69.97%	68.63%
Performance 2 Set Solo (35% of practical exam)	65.64%	68.60%	62.57%	62.37%
Performance 3 Improvisation (20% of practical exam)	61.90%	66.28%	63.13%	57.25%
Part 4 Interview (10% of practical exam)	54.88%	61.02%	55.73%	53.59%

The repeatedly low mean average scores (compared to the other three parts of the examination) for the interview (part 4) are highlighted in red. These results suggest that improvements in Part 4 of the examination, the Interview, (based on the first 3 performances and preparation for them) could be made to increase the overall scores of candidates, to reach the desired mean of 60% for that section. The practical examination results indicate that the mean of this section is lower than the mean of the other three sections. Although the structure and weighting provide balance between parts of the exam that are easier to achieve high scores and the parts that are not, there still remain considerations around fairness and face validity.

The examiners' report SCSA (2012), when commenting on specific sections for part 3 of the examination, the structured improvisation stated, "It was evident that many candidates had choreographed or rearranged movements" (p.3) and for part four (interview), "Most candidates found the interview challenging. Candidates often reflected for 30 seconds or more, which was too long, before answering questions. Responses were often not justified" (p.3). This indicates that students possibly struggled to remember what they had just performed as part of their structured improvisation and they were unable to effectively engage in their responses.

The examiners' report SCSA (2013), when referring to the interview section of the examination revealed, "most candidates found the interview challenging with poor responses generally to questions about design, restaging and choreographic processes"

(p.3). Evidently candidates consistently struggle in parts of the examination where the assessment of skills other than performance, technique and creativity, consistently diminish levels of achievement.

Interestingly enough, table 1.3 below highlights the results from the examinations SCSA (2017), SCSA (2018) which took place after the collection of data for this research for the next couple of years, where they too indicate similar low scores for the Interview section of the examination.

Table 1.3 Mean Average Scores for Interview ATAR Dance 2017-2018

	2017	2018
Part 4 Interview (10% of practical exam)	55.83	58.02

It occurred to me that the problem could be due to failure of the assessment model to inculcate higher-order thinking skills, making it difficult for students to critically reflect and give reasoned and considered responses in their interviews. Reflection and reasoning are necessary (Lavender, 1996) in dance for cultivating critical thinking skills and generating creative output. While assessment clearly requires higher-order thinking, the examination process does not encourage metacognition.

The combination of not being able to remember their improvised two-minute sequence and task, public speaking, nerves and exhaustion could also be a problem. Although marks are not allocated for their skill to speak in front of a panel, this form may hinder their ability to process and articulate their response to their optimal aptitude. The first part of the exam is very physically demanding, and most candidates are out of breath and not fully recovered before they are interviewed. This arguably unnecessary mode of assessment for the teenagers, may hinder the response of some candidates who may otherwise be classed as highly intelligent and articulate. Due to the illusive nature of dance, like any other creative or performing art, interpreting meaning is not only difficult but also challenging to articulate in language. Finally, the analytic marking key could also be problematic in providing the most reliable marks in an assessment. Thus, other forms of assessment have offered more reliable and valid forms of creative performance assessment (Tarricone & Newhouse, 2016).

While this research is investigating the use of the technology to digitally enhance assessment in dance, I do not believe that technology alone is the answer. I acknowledge that in some cases, common sense and experiential knowledge can be overlooked, especially when considering the best ways to increase a student's interview skills. The WACE authorities maintain that an interview, directly after the execution of two solo's and a structured improvisation is efficacious, but I am not convinced. Although digitally facilitating the Interview is only part of the investigation, the study in this respect and overall is still both timely and warranted, when trying to assist students, teachers and markers/examiners during the assessments through digital facilitation. For the purpose of formative assessment and moderation, I am more inclined to believe that technology as an assistive method in supporting a fair, equitable, authentic and reliable assessment process is a legitimate way forward. Based on the significance of the research and the associated problems, the research questions were developed.

Research Questions

The primary research question was: *In what ways can digital technology in the assessment of dance be used to support the current form of assessment?*

This question was aimed at uncovering the ways in which technology can assist summative evaluation and inform future practice. I was aware of the potential of technology in summative assessment of other practical senior secondary subjects in WA and wanted to understand its application in the context of dance and performance. The goal was therefore to uncover the strengths and limitations of digital assessment in dance and contribute new knowledge to the field.

Two secondary research questions supported the primary question. The first was: *Are the results of assessing digitally enhanced dance examinations consistent with assessing the original, and what are the likely causes of discrepancies?*

Explaining discrepancies between marking methods for summative examinations was key to determining the success of the model. Having a reliable test that delivered measurable and repeatable results was vital if a digitally facilitated dance examination was to become feasible. By exploring the use of the applied technology to digitally

facilitate the dance performance examination, insights were gained into the authenticity, reliability and feasibility of implementing such technology within the context of a dance performance examination.

The next secondary question was: *What are the perceptions of the students, teachers, and markers of digitally captured dance performance for assessment?*

It was necessary to obtain the opinions of key stakeholders in order to determine whether the technology was effective in its application in practical dance assessments. This included students, teachers, examiners, markers, and curriculum specialists. For students to engage in higher-order thinking in every aspect of the course, assessment needed to be part of a holistic approach.

Thesis Overview

After this chapter an extensive literature review explores the history, engagement, and how external influences impact upon dance and the assessment of it. Further discussions reveal the ways in which technology is used to support dance assessment and also how technology is used to support other subjects with a practical performance component for summative evaluation. The literature provides the rationale for the interconnected aspects of dance pedagogy, curriculum and policy, technology in assessment and the historical, social and cultural influences at play, which in turn provide a conceptual framework for the study. The gaps and limitations drawn from the literature establish how this study contributes to new knowledge.

Chapter 3 identifies the theoretical paradigm, methodology, explains my ontology and associated educational theories, such as those from Dewey, constructivism and critical theory. It goes on to explain the research design and methods used to collect and analyse the data. A description of the study is detailed, and the participants are presented.

Chapters 4, 5 and 6 present the results of the study, both thematically and numerically, each providing answers to the research questions. The sequence of events which unfold through the results chapters are synonymous to the order in which the data was collected, and instruments used in the investigation. Chapter 4 provides insight

into the current practice of dance educators, their use of ICT/mobile technology to support assessment and the surrounding opinions regarding the usual ATAR dance examination and their thoughts on the possibility of implementing a digitally facilitated examination process. Their opinions explored highlight an openness and awareness for change with regard to making effective use of ICT and mobile technology to support learning and assessment. Chapter 5 reveals the examination results from the 2 different methods of examination (live and digitally captured) with a discrepancy analysis explaining the possible causes of markers awarding different scores. Notions of authenticity, bias, fairness and the maintenance of equitable practice is explored. Chapter 6 hears the voices from those involved in the digitally facilitated dance performance assessments and examines how the students, teachers and the markers view learning and assessment both with and without the digitally facilitated experiences. The notion of change is again revisited after the implementation of the digitally enhanced examinations and explorations of the ways the DAapp may be used to assist in the current form of examination. This in turn allows for an understanding to be gained on the ways the DAapp can be used to support the current form of assessment.

Chapter 7 is the final chapter of the thesis, which addresses the research questions and delves deeper into the discussion and analysis of the findings and explores the implications that a digitally facilitated process of assessment for dance performance has with regards to both summative and formative practice. The discussion further engages with the ideals for dance assessment and skills for the 21st Century and thus, challenges the status quo, offering a new framework for the digitally enhanced assessment of dance performance which compliments the new knowledge gained from the study. Finally, there is a conclusion to the thesis where the limitations to the study are shown and recommendations for future policy and research are given.

Chapter 2: Literature Review

This chapter provides a review of contemporary practice of assessment in dance, technology in dance education and technology in high stakes assessment for other subjects with a practical component. The chapter tracks the pace of evolving technology and educational practice in particular subject specific scholarship from the past two decades. The chronological structure and critique of the reviewed literature allows for the process of change and integration of developing technology to be discussed as it relates to the assessment of dance and the wider contextual framing. Thus, the influences on the assessment of dance within education such as history and culture, policy and curriculum and the desired practice within arts education culminate in a discussion around the continually shifting boundaries that technology brings to the dance arena and how such technologies will continue to shape, challenge and define the practice of dance and the assessment of it. Having lived as a dancer and dance educator for the majority of my life, this lived experience provided a deep connection to the topics under review, offering strength to the emic perspective provided. This insider perspective is a credibility asset in respect of the fit of the findings to the context. The chapter culminates in presenting a conceptual model based on the literature presented in the chapter.

Dance assessment is becoming increasingly more considered of late. Researchers around the world are asking for adaption within the classroom, challenging historical underpinnings and formalities of current assessment practice to align assessment with changing teaching and learning methodologies and to equip students and teachers alike with the growing demands of a fast paced and technically developed world (Brown, 2015; Brown et al., 2015; Phillips et al., 2009; Stinson, 2016b). As a dance educator I have often considered the purpose and delivery of current dance assessment. Is its purpose to promote and improve learning progressively? Or is it a basis of grading and achievement, or both? Why, what and how do we assess against these premises given the divergent juxtaposition of tradition and historical points of view against the artistic nature and development of dance acquisition and professional practice in the context of the modern world?

Despite the growing use of technology in education and pedagogy, there appears to be little literature on the use of technology in summative dance assessment. Yet there is an abundance of literature on the use of technology and how it does or does not support assessment in tertiary education (Brady et al., 2019) and other secondary subjects with a practical component (Pagram et al., 2018; Williams, 2012; Williams & Newhouse, 2013). However, for dance in Australia (and internationally) the scarcity of literature on the use of technology and how it can support assessment, in particular, final summative examinations, may be attributable to debate around the value of summative assessment in dance and the lack of scholarly articles on dance assessment by practitioners. This indicates a need for greater scrutiny of digital technologies in summative assessment to identify the key players, ideologies and successful methodologies surrounding the assessment of dance in the 21st century.

The Place of Dance in Education

There are various political, cultural and historical agendas surrounding the context of dance education and its place, value and significance within (or left out of) the curriculum (Brown et al., 2015; Miller, 2010; Randall & De Montfort University Centre for Excellence in Performance Arts, 2009). Dance and education research between Australia, Denmark, the United States and Canada uncovered how political and cultural agendas can disadvantage teaching practice and teacher training, impacting on curriculum development, and that a lack of consistency in clear standards for dance and adequate training for both teachers and artists exacerbates the issue (Brown et al., 2015). They also found that socio economic circumstances play a role in determining which students receive formal dance training.

Brown et al. (2015) contribute to a vast topic, crossing both cultural and economic systems on an international scale. Despite this not being the central theme of my investigation, larger issues of power relationships across the education sector and the value of dance in Australian secondary education play a role in how dance is understood and taken up. This in turns bears relevance to how dance is taught and assessed. Training, standards, and assessment were at the heart of this research, with the aim of contributing to a broader conversation on dance as a valuable subject in

secondary education. However, before elaborations are further made around this debate, and how it plays into the significance of my research, the nature of formative and summative assessment is discussed below to provide background and context.

Typical Dance Assessment

Dance assessment for live performance in Australia (and in other countries), is something which is still based on historical practices, that is, usually a dancer performs a dance or set of sequences/dances live, to an examiner or panel of examiners, at either a dance studio or room/studio at a school. While there may or may not be other candidates in the examination at the same time, the only audience member(s) present is the examiner(s)/assessor(s). This examination practice is held for ATAR Dance in Western Australia, High School Certificate (HSC) Dance (in New South Wales), Victorian Certificate of Education in Dance (VCE, Victoria), A Level Dance in the United Kingdom (UK), the Royal Academy of Dance (RAD Ballet) and the Imperial Society of Teachers of Dancing (ISTD) Modern and Tap internationally (to name a few). Other practices and moderation processes use recorded footage of performance for summative evaluation such as the General School Certificate of Education Dance AQA (2018) in the UK and the International Baccalaureate Organisation (2019). The majority of these examinations are much more than just a performance of a learned sequence or set of sequences. Some include improvisation, oral interviews and choreographic assessments. They are all however, the assessment of achievement of a given task on the day of the examination, and most do not include assessment of continued learning or creative process. This is arguably in misalignment with both professional practice (where value is placed in the ongoing development of the creative process – to be discussed in more detail later in this chapter) and authentic performance. By authentic performance, I mean a performance for an audience and for the purpose of entertainment, not a performance under examination conditions.

Origins of Dance Assessment

It is useful to understand where summative dance assessment is today by looking back at the origins of dance assessment. Standards, assessment and recognition in

dance during the late 1980s came from key stake holders in dance education across the globe, from Australia, America and the United Kingdom (Stinson, 2016b; Warburton, 2006). This was considered a defining moment in dance education as dance as a unique and significant subject of learning gained national and international recognition. Dance was finally given attention, value and a place within education. During the 1990s the USA developed their assessment and inclusion of dance in the K-12 curricula. In 1992, dance became part of the UK's National Curriculum, despite both countries placing dance under Physical Education and not the Arts. Subsequently, there came the high stakes summative assessment of secondary dance for GCSE, A-S and A-Level Dance.

For WA, whilst dance was embedded as part of the curriculum, with allocation and inclusion under the Arts at the discretion of the principal - standardised high stakes summative assessment - the WACE Dance was first established in 2009, after a long and arduous process. For Dance to be taken seriously as an ATAR subject, the assessment was required to be as robust and comparable to any other ATAR subject. Despite the recognition dance eventually achieved in WA, there was still the longstanding political framework and power differential, where subject hierarchy of Science over the Arts remained and thus impacted the nature of the summative assessment of dance (Bleazby, 2015). This entrenched structure was used to give rigour to the assessment of dance and thus, the assessment as it stands was devised. Whilst the origins of prevailing dance assessment protocols have been identified, it is important to reiterate that the current WACE Dance examination (est. 2009) sits (somewhat) at odds with my emic perspective as an experienced dance educator, where questions of fairness emerged and thus provided me with the impetus to investigate solutions to the perceived negative impacts on students. Therefore, this emic perspective is a critical part in framing this study (Merriam & Tisdell, 2016; Yin, 2010).

Interestingly, Susan Stinson (2016b) acknowledged the power structures that impact on assessment of the arts and proposed that dance only remains in mainstream education if it complies with the conditions of the hierarchy and conforms to final, end-of-course examinations. This stance was supported by art historian, Malcolm Ross (1986), who referred thus to the long-standing contradiction of assessment in the arts:

Many – perhaps most – arts educators feel an innate abhorrence towards many of the traditional forms of assessment practiced in schools. Rank-ordering children in terms of their paintings, their acting or musical performances seems to strike at the heart of the relationship that nurtured them. Constraining and curtailing personal creativity in the interests of meeting the requirements of external examinations . . . forces a compromise over fundamental principles (p. 108).

As time progressed, the nature of assessment continued to generate debate. Smith-Autard's midway model of dance assessment is a renowned theoretical foundation for the integration of process and product (Smith-Autard, 2002). The author placed an emphasis on problem solving and training through a process of creation, performance and appreciation of dance, a model I used successfully both in the UK and Australia. However, over time, I've wrestled with concerns about assessment, the curriculum, aesthetics of dance, socio-cultural influences, and particularly how they synchronise with technology.

Despite achieving major milestones, some educators in the early years of the 21st century were troubled by the heavy reliance on external dance assessment in the UK and America at the neglect of developmental aspects of learning (Hong, 2006; Warburton, 2002, 2006). Warburton (2006) believed that final examinations, and their sharp focus on summative evaluation, induced fear of the learning process in students. He proposed an "intelligence-fair" assessment for capturing and evaluating achievement in an ongoing manner as a more authentic and reliable method (p. 14). The notion of ongoing development in the arts has been accepted which for some, sits alongside an evaluation model which diminishes best practice in the domain. The notion of developmental learning and artistic practice in dance goes hand in hand with the ideal of reflective practice.

Reflective Practice

Prior to educational dance reforms in the late 1980s in Australia, the UK and America, creativity, cognitive skills and students' personal and cultural experiences were given very little consideration in pedagogical practice. A study by Warburton (2004) investigated the nature of dance teachers' beliefs and found that final external examinations followed a dominant, teacher-led instructional approach. The author discovered that teachers were more likely to use critical thinking practices, such as reflection, discussion, exploration and self-guidance, with their high-achieving students than those of lesser ability. The study also showed that dance teachers preferred teaching more accomplished dancers.

Fifteen years have passed since that investigation, and although those tendencies are still apparent in many schools and studios, there have been shifts in practice as a result of advancements in teacher education. Outdated practices have been challenged by the new generation of dance educators and advances in technology, and the current study is therefore a timely examination of technology as a tool for enhancing students' cognitive skills and enabling critical engagement.

Since the early 2000s, reflective methodologies and student-centred practices have become a more established form of teaching and learning (Smith-Autard, 2002). Over the past 15 to 20 years, the traditional top-down, narrowly-focused method of dance assessment has been replaced by more flexible, constructivist approaches in secondary and tertiary institutions, by embracing a concept of learning through discovery (Bannon, 2010; Leijen et al., 2009; Phillips et al., 2009; Risner, 2017).

The literature on reflective practice in dance education focuses mainly on Europe (Risner, 2017). In 2014, Tembrioti and Tsangaridou found fewer than 10 scholarly publications on reflective practice in dance education, revealing a large gap. Over the years, other areas of education - namely teacher education, have experimented with ways in which technology can be used to assist reflective practice in pre-service teacher education (Coggin et al., 2019; Cunningham, 2002; Parkes & Kajder, 2010). Nonetheless, for dance education, the literature remains sparse. For this reason, reflective practice

was a fundamental part of the current investigation, seeking insights and a better understanding of the intersection between technology, assessment and reflection.

Reflective Practice, Technology and Critical Engagement

Judgement based on reflection is considered central to the artistic process in tertiary education (Doughty & Stevens, 2002); and in dance, reflective practice is aimed at nurturing holistic learning outcomes. For the most part, combining technology and reflective practice is left to the discretion of teachers, all with varied beliefs and experiences (Smith-Autard, 2003). Moreover, teachers' practice is directed by final, end-of-course assessments (Warburton, 2004) which do not call for reflective practice or technology. There is an apparent disconnect in the above scenario between the absence of technology in the secondary and tertiary education sectors and the need for reflective practice. To delve deeper, key stakeholders in WA dance education were invited to participate in this research.

The small amount of existing literature on the topic of technology and reflective practice in dance (Doughty et al., 2008; Doughty & Stevens, 2002; Leijen et al., 2009) indicated that reflection assisted by technology was found to be advantageous. Doughty et al. (2008) set out to develop the critical, analytical and reflective skills of students for movement improvisations. Questions like "what do I do?" and "how do I do it when improvising?" (p. 136) formed the basis of the study. The project used mini-DV cameras and MP3 players, worn on participants' arms, to allow them to verbally articulate their choices in a given moment and document the process. Playback monitors were used to facilitate student self-reflection and develop a conscious approach to improvisation. The synthesis of technology and reflection was found to improve teaching and learning of improvisation. The findings from the current study reinforce the benefits of technology for enabling a greater understanding of form and content in improvisations, particularly since metacognitive strategies are likely to assist with preparations for examination.

In the early 2000s, dance researchers experimented with new ways of using technology, challenging the protocols of traditional performance, teaching and learning. A study undertaken by Leijen et al. (2009) examined the use of a video-based online

learning platform, DiViDu, to facilitate students' daily reflection in a choreography course. The small-scale study involved 15 students using Movie Maker (Microsoft Windows) to upload their work to DiViDu and participate in reflection and analysis of their tasks. They also took part in semi-structured interviews. The authors found that reflection with technology enabled students to articulate their responses more adeptly and concluded that "further research should be focused on investigating more effective facilitation for supporting conceptualisation of ideas used in practical experience" (p. 175).

Collaborative Learning and Assessment

Coupled with reflective approaches and exploration of technology in dance education, the first two decades of the 21st century have been characterised by increased collaborative learning and assessment. For example, Pennison (2004) conducted a three-semester long choreographic project with self and collaborative assessment tools, in which students became aware of their own strengths and weaknesses and took responsibility for achieving higher goals. Pennison found that students were more empowered, informed, committed and effective learners as a result of their involvement. Hong (2006) echoed this shift in dance pedagogy to self and collaborative group assessment, supplanting the traditional view of assessment as a final product or final examination. Hong argued that the traditional role of the teacher, as an expert funnelling knowledge to students and exerting authority over technical and artistic development, reinforced a vertical power hierarchy that stunted learning. Interestingly, peer feedback and collaboration in dance have become more common as the benefits have become recognised by students and teachers (Stinson, 2010), igniting discussion around assessment in dance.

Education of dance teachers and students should include ongoing review of how to engage with content for and of assessment in order to attain the required standards. Stinson (2010) shared this view after discovering students formed a close personal and emotional connection to dance that instilled intrinsic motivation. For students who were not passionate about dance, Stinson found that supporting their other interests was key to their motivation, engagement and ultimate achievement. As an experienced

secondary dance educator, I can relate to this concept. To engage all learners from wide-ranging backgrounds and diverse abilities requires tapping into each individual to get the whole class moving. Stinson also concluded that it was essential to enable a “sense of autonomy and personal control, especially in setting standards and assessing the degree to which they have been met” (p. 124). These findings suggest that accomplished assessment requires both students and teachers to have a clear understanding of what is being assessed, how it is being assessed, and how students can achieve their goals. It is therefore important for methodology to support summative assessment and simultaneously embed formative practice for the modern learner.

In Western Australia, national exemplars of student performances are available to enhance summative and formative assessments in Years 7-10 (School Curriculum and Standards Authority, 2016b). These audio-visual examples are also used in several countries as educational strategies, by providing students with a benchmark of performance quality. Taylor (2006) argued that criteria-referenced marking without performance exemplars of expected standards is insufficient for making comparative judgements and giving consistent feedback. This is particularly relevant to assessment in dance, which is by nature a subjective evaluation of a creative endeavour.

Peer assessment, feedback, scaffolding, and datafication of learning processes have been endorsed as effective activities in formative assessment, with particular promise for the use of ICT (Webb et al., 2013). Ling Lee (2015) created an online learning community for her dance students in a peer-to-peer exchange that emphasised multiple voices, supportive feedback and rotating leadership. Such a horizontal approach to collaborative learning proved to be a positive experience, because it positioned participants as equal collaborators, interacting in a long-distance, digital, creative process. A more recent study (Hsia et al., 2016b) linked intrinsic motivation and learning to online video-based peer assessment in a performing arts course. The study found peer ratings correlated with the scores awarded by teachers, suggesting that students can score reliably with guidance on rubrics and other operational aspects of visual, interactive platforms. Nonetheless, some researchers (Webb et al., 2018) cautioned against peer assessment for emotional, social and cultural reasons:

For example, learners may not accept peer feedback as accurate or they may feel uncomfortable in assessing their peers or be unwilling to take responsibility (Carvalho 2010; Topping 1998). Thus, key challenges for enabling effective peer feedback include establishing a safe environment in which learners feel comfortable and confident in their assessment capabilities; promoting, managing, timing and designing peer assessment and managing learners' expectations (p. 446).

Emotional and motivational factors must be taken into account in learning and assessment. Engagement and motivation have long been recognised as central aspects of learning (Dewey, 1913 as cited in Webb et al., 2018), but their inclusion for accurate assessment have only more recently been recognised (Khine & Areepattamannil, 2016). Whilst reflection, engagement, peer support, assessment, and technology are being explored in Europe and Asia (Hsia et al., 2016a; Lin et al., 2019), they are under-researched in Australia. Peer assessment and correlations between teacher and student scores were not central to this investigation, but it was necessary to uncover any issues arising from technology and assessment from the perspective of the participants. Moreover, the literature suggests that a supportive peer-to-peer community is pivotal to the future success of dance education.

Technology makes it possible to access large amounts of assessment data from which judgements can be formed about education systems, schools, teachers and learners (Pellegrino & Quellmalz, 2011). This has been achieved through widespread uptake of ICT-enabled assessment and has resulted in more cost-effective delivery (Webb et al., 2013). A range of ICT products is currently available for pedagogic dance practice. Although educators are mostly using technology in their classrooms to supplement the content and assess knowledge, skills, and understanding, this appears to be inconsistent across the sector and is dependent upon teachers, policy makers, budgets and resources. Parrish, (2007) called for further research into the use of technology in dance education, proposing a formal review to obtain insights and understanding about any associated issues. Research on the subject is gathering

momentum, but more is needed to keep pace with new developments in technology and its growing relationship with education.

Developments in Technology for Teaching and Learning Dance

Besides using technology to enhance reflective practice in dance education, other artists and educators used technology in an array of interesting ways including how the digital body may be represented, how technology is used to feedback any information regarding the performance (such as skills and technique), creative processes, analysis of professional works and performance collaboration. The following overview of literature in this space not only acknowledges others creative and insightful ways of incorporating and enhancing technology into the teaching and learning of dance but also reveals a gap in the literature when it comes to assessment.

Interactive multimedia and the teaching of dance skills and styles are principally aligned to the multidimensional applications of technology. Thus, the development of internet learning management systems for the teaching of dance became somewhat adopted (Dania et al., 2011). Over a decade ago there were a series of crucial projects that advanced knowledge on the intersection of technology across dance which Dania et al also recognised. In the UK, Smith-Autard (2003) explored the implementation of technology in the facilitation of critical analysis of professional works, in particular, the teaching and learning of dance form. This resulted in providing teachers with, “technology toolboxes to enhance pupils’ knowledge, creativity and skills in dance” (p. 151). Whilst Smith-Autard successfully used technology to assist in the understanding of dance form, the influential dancer and choreographer William Forsyth (2003) used technology for support for improvisation and later in the creation of Motion Bank, where the use of technology supported choreographic practice and documentation and specifically, online digital scores (Motion Bank, 2016). In another study, Golshani et al., (2004) turned to the effective use of technology to present the comparisons of traditional dances, whilst in another study by Wilke et al., (2005) technology was used for dance notation. Leijen (2008) conducted research on, “students’ perspectives on e-learning and the use of a virtual learning environment in dance” (p. 147). They incorporated digital portfolios and online interactive composition as technology-based

assessment tasks. Leijen (2008) drew attention to the effective use of the group interview of the students being more informative than a survey when questioning them about the technology-based tasks for assessment. They also used data and investigator triangulation to increase the trustworthiness of their findings and concluded that the feasibility of e-learning in a digital environment remained dependant on feedback from teachers.

Merce Cunningham is known as a pioneer of technology in dance performance, from his early works during the 1980s and continuing later into the 21st century using motion capture technology. Subsequently there have been various projects and studies undertaken in the realm of virtual reality training systems for the dancing body using motion capture technology (Chan et al., 2011). These included 3D visualisations for learners receiving feedback on how to improve movements via the virtual teacher (by wearing a motion capture suit), avatars of instructors rendered in the virtual environment until both virtual master and observer perform the same motion, synchronised presentation of several streams of data; including video streaming, 3D animation, music, text description and Laban notation and head mounted displays showing overlap of learner and professional dancer for comparison. Risner (2008) believed there were limitations to overcome with “the research expertise involved in advanced skills for telematics performance and motion capture” (p. 124) because they were beyond reach. Although this is unfortunately still the case for the everyday user within secondary education in dance in WA, they are no longer out of reach for tertiary institutions in WA such as the research projects that encompass the use of motor learning and biomechanics that are being applied to identify beneficial approaches to balance training for ballet (Hopper et al., 2018). Nonetheless, extracting and representing meaningful information from large data sets associated with human movement is a difficult task for modern human movement researchers with challenges associated with modern data analyses (Hopper, 2015), which implies a further lag in time before such technology meets mainstream secondary education. A study in Japan also looked at implementing virtual reality teaching materials for learners in dance education (Usui et al., 2019). These clever training systems provided dancers and

educators unique ways of learning and receiving feedback on the technique required for performing and executing movements accurately.

The digital and virtual world of dance training offers insight into alternatives to the traditional mode of dance education and challenges the required notion of a real dance teacher in real time. However, these technological enhancements when applied to an assessment of skills, other than capturing the accuracy of technique, appear somewhat flawed. Learning processes and the assessment of high order thinking applicable to performance, creativity and justification of ideas are not addressed in these studies. In addition, the feasibility, cost and reliability of such technology is still a concern of digitisation using motion capture technology within secondary education. As technology and research advances, these issues will undoubtedly be investigated and at some time in the not too, distant future these technologies may be embedded more fully into the teaching of secondary dance.

The above-mentioned studies and discussions around assessment in dance imply that by having a solid understanding of assessment and learning, concerning both students and teachers, barriers to learning and assessment begin to dissipate. What appears most obvious, is that we first need to equip teachers and the next generation of pre-service teachers with the skills to deliver a dance curriculum that is responsive to the complexity of all participants, that is, students, teachers, examiners and curriculum specialists. Although other research supports assessment of the formative nature for dance, using technology to enhance summative assessment is considered of value and worth for other subjects in WA (Williams, 2012; Williams & Newhouse, 2013) and the UK (O'Brien, 2018). Schools in Ireland are being given grants of €330,000 for technology to record the work of "students who take the new physical education (PE) exam in the Leaving Cert ... to be given digital devices to submit videos of themselves taking part in an activity – such as athletics, rugby or ballet – for examiners to grade" (O'Brien, 2018, p. 1). In addition, a Swedish study found the State of Geneva to have a more successful assessment of PE and Dance because it was informed by a summative assessment, whereas the state of Vaud was deemed less effective because there was no final evaluation and students ongoing assessment was deemed poor (Lentillion-Kaestner, 2020). Although some of the reviewed literature suggests that ongoing assessment in

the arts is more in line with arts practice and the desire of those educators (Phillips et al., 2009; Stinson, 2016b; Warburton, 2002, 2006) without the rigour of summative assessment dance education and assessment may become less effective. It is therefore relevant to consider these pieces of research and educational grants and policies elsewhere, not only because they inform the agenda of this research, but because dance is dominated by the summative, end examination assessment model in WA.

Educational Research and Technology in WA - How Digital Technology Supports Assessment

Using digital technology to support standards-based courses and provide the educational community with a system which conducts assessments that are reliable, valid, authentic, cost effective and feasible have been the focus of research at ECU earlier on in the 21st Century (Newhouse, 2012a; Williams & Newhouse, 2013). These studies focused on Design and Visual Arts and on courses that had a practical component; Physical Education Studies (PES), Languages other than English (LOTE), Applied Information Technology (AIS) and Engineering, respectively.

In contrast to large scale external assessment for secondary school subjects in WA, researchers at the university also engaged with the successful implementation of a digital assessment tool that enabled tertiary Arts Education students the opportunity to engage with performance assessment and feedback from tutors and peers multiple times (Wren et al., 2013). Making judgements about artistic works is complex and is often accompanied by subjectivity, writing whilst watching a performance and tight marking timeframes. How this is fair for the student across multiple markers bear great relevance to the marking of a dance performance during an examination. As an experienced examiner of dance performance, I understand the challenges faced by examiners looking down to write and hence missing parts of a performance. When this is coupled with live moderation, this can sometimes be problematic due to the ephemeral nature of performance, thus an arguable impact on fairness and validity.

More recently at ECU in Perth WA, research continued to build and further studies engaged with the successful implementation of comparative pairs judgements for creative performance (Tarricone & Newhouse, 2016) and comparative pairs

judgements for Visual Arts and Design courses in high stakes assessment (Nastiti, 2018) compared to that of the analytic marking system. In addition, research in WA looked at engagement in the curriculum through the use of ICT and STEM (Newhouse, 2017), whilst others focused on e – exams for Computer Education and Design and Technology courses (Pagram et al., 2018) and e – exams in high stakes unsupervised environments (Hillier et al., 2019).

The use of digital technology in high-stakes tertiary entrance dance examinations has remained uncharted, despite indications in the above studies attesting to its benefits. Dance is a longstanding part of history and culture, intended for an audience to view performances live. For teachers and examiners, digitising dance assessment could be challenging, even though social media technology and digital representations of the dancing body have become popular features of modern culture. In addition, key stakeholders had different opinions about what is successful and what is required, thus adding new knowledge to the field.

Digitisation of dance assessment has the potential to improve manageability and reduce costs, as well as putting into effect consistent standards that induce validity and reliability of examiner scores. Additionally, the process retains a record of student achievement in support of moderation, reflection, and training. Previous studies and the current research provide strategies for meeting standards and improving authenticity, in alignment with the focus of the curriculum. For formative and summative assessment to harmonise with arts practice and, at the same time, impose the rigour required for high-stakes examinations, culturally relevant practice needs to be addressed.

Cultural Relevance of the Dance Curriculum

For assessment to be aligned with culturally relevant pedagogy, considerations of embedding technology to support the desired curriculum of the 21st Century is an area underexplored for dance and the assessment of high stakes dance performance. Technology undoubtedly progresses and impacts rapidly and with the extra pressure to include technology in teaching, learning and assessment, continuous exploration to encompass best practice is important.

Cultural relevance and the content of dance education are inherently tied (McCarthy-Brown, 2017). McCarthy engages her reader with the notion of culturally relevant pedagogy for dance by questioning old fashioned customs and as Bucek (2018) acknowledges in a review of her work, ones which are “founded in traditional Western and associated historically privileged dance education canons” (p. 87), suggesting that when cultural experience and cultural knowledge are embodied and attributed, learning in dance becomes relevant. In addition, when considering the notion of culturally constructed knowledge and educational practice, the dominant power relations that prevail the traditional school curriculum hierarchy, has historically privileged the Sciences over the Arts (Bleazby, 2015) and needs to be somewhat challenged.

There are many culturally relevant topics throughout global history, all of which bare relevance to cultural learning in dance. Dance is seen to trace defining cultural and artistic movements from romanticism, expressionism, modernism and post modernism, inclusive of many topical debates around class, political constructs, aesthetics, gender and race to name a few. These major influences are seen to shape and challenge dance and its societal values. One very current and rapidly progressing world-wide cultural trend is the application of technology through every aspect of education, culture and industry. It is here where I ponder the significance of culturally relevant pedagogy, not only in the content delivered, but the facilitation and mode of engagement with which learners and educators navigate the taught curriculum and ultimately, assessment. Learners and teachers are constantly exposed to and are consumers of technology outside of the classroom, this change in culture is arguably less responsive in the classroom.

Brown (2015) discovered that political and cultural agendas alongside teacher education in dance and student interests often impacts negatively on the relationship between curriculum development and teacher’s practice. A lack of confidence with some teachers and a negative attitude towards delivering dance in the suggested curricular for the 21st century, is at play. The knowledge of young students in the dance class today include popular culture, media and an ability to use technology to promote and market themselves and communicate globally. This indicates that a re-assessment of what is happening in training and development of curriculum in the field of dance

education needs addressing as soon as possible: surely cultural relevancy requires a more tech savvy curriculum. Nonetheless, for a tech savvy curriculum to be adopted considerations toward digital literacy within dance education are addressed.

Digital Literacy

The statement below, taken from Western Australia's ATAR Dance Syllabus SCSA (2018) ascertains digital literacy in dance being fundamental to learning, communicating and responding.

Dance relies on multiple literacies; oral, visual, kinetic, text based and digital literacy as fundamental to learning, communicating, creating, and responding. Students use and develop literacy skills as they describe, appraise and document their own dance and those of their peers. They respond to, interpret and analyse increasingly complex dance works made by others. They use their literacy skills to access knowledge, make meaning, express thoughts, emotions and ideas, interact with and challenge others (p. 4).

In the above citation, digital literacy forms part of the general capabilities for the course. However, students' digital literacy skills are not assessed. The statement implies an expectation for the course to engage with technology in teaching and learning, yet teachers are left to adopt their own approaches, knowledge, skill sets and understandings to achieve the desired outcomes. There is strong evidence to suggest that teachers' backgrounds, attitudes and perceptions of ICT play a defining role in determining to what extent they adopt technology (Brown et al., 2015; Erstad & Voogt, 2018). It is also noteworthy that apart from entering marks online, summative assessment does not utilise ICT at all. This may infer a lack of motivation to engage by teachers who teach to the assessment format.

Formative assessment is a huge part of informed practice and cyclical process of learner development, consequently, to make formative assessment effective, teachers and learners require a high degree of assessment literacy to completely engage with content and context. An awareness of the support ICT can offer to both formative and

summative assessment to address the needs of the curriculum and equip students and teachers with the necessary skill set, appears to be a priority in alignment in the digital age (Webb et al., 2018). Webb et al. (2018) further highlights the importance for learning of formative assessment, through the support of IT, which would then shift the strong focus on summative assessment and supporting a more formative approach. This notion is something which strikes a chord when considering the nature of dance, assessment and culture in the digital age. Creativity, complex problem solving, communication and collaboration are deemed as skills necessary for the 21st century (Webb et al., 2018).

When considering the above, modern youth and their modern culture have to be deemed relevant. They are no longer consumers of new technology; they evolve simultaneously side by side. Youth are multiliterate and able to use technology to express themselves and communicate with ease. Mobile technology, smart devices and access to the internet, is a defining feature of our current era and given skill set of emergent generations. Brown (2015) recognizes this and believes that by matching the skills of students and educators in a modern world, new perspectives and roles for the future will emerge.

The use of digital technology is noticeably significant and relevant in generating and realising curriculum in all areas. The use of digital technology in arts education and in particular dance education opens up new perspectives for arts education and requests new roles for educators in the twenty-first century (p. 145).

By developing an embodied understanding and alignment of skills and goals for the 21st century within dance education and bridging the gap between education, assessment, policy, industry and culture, an adaptive future lies ahead. This research begins to tap into the connectivity, interactivity, reflexivity and critical engagement required for dance and assessment in a digital environment, supporting a developing curriculum and modern learner. By embedding digital skills as a required practice in the curriculum, there will then be a greater facilitation to equip current and future dance students with the necessary skill set for the 21st century.

21st Century Skills

How to assess dance in the 21st century, against the myriad of complex life skills needed, requires developing assessment in ways that support learning rather than take time away from it. Not only is this essential, it is somewhat under explored (Stinson, 2016a). The amalgamation of ICT, software development and audio-visual systems that empower users to access, archive, disseminate, analyse and manipulate information, bears relevance to the discussion of twenty first century skills.

Transformative changes have taken place in the world during the last decade due to the explosion of inter-connectivity linking people from all walks of life across the globe. Low-cost Information and Communication Technology (ICT) tools, especially internet and mobile technologies, are powering this wave of change. As a result, new skills and innovative abilities are required of students and workers in their learning, livelihood and life (Nielsen and Burrige, 2015, p. 145).

Creativity, problem solving, communication, collaboration, self-regulation and computer and information literacy are becoming increasingly popularised as 21st century skills in the midst of societal changes, learning and future employment. Inclusive of the Arts, this is driven by globalization, automation and digitization (Webb et al., 2018). Also highlighted by Webb et al., (2018) are the comprehensive research projects such as those associated with the PISA surveys and the, “Assessment and Teaching of 21st Century Skills” (p. 448), which have studied collaborative and complex problem solving and computer and information literacy. Nonetheless, it is still apparent that formative and summative assessment practices integrating 21st century skills into the curricula in schools, frequently trail behind (Erstad & Voogt, 2018).

Dance educators have a responsibility to create an effective and worthwhile dance education program by considering the contextual focus and skill set required for 21st century learning in dance. Whether or not the taught dance curriculum reflects these skills needs to be a consideration of the educators in the classroom. Technology in dance offers a vast array of opportunities for students and teachers to enhance

learning and assessment of dance given the complexity of skills required. Using technology in dance to enrich learning are the objectives of a solid dance curriculum, where the aim of education in the 21st century and an embodied understanding of dance and technology are upheld (Brown, 2015).

The considerations of an embodied understanding of technology embedded within modern learning in the dance class is paramount for not only the learners of today, but for the next generation. Assessment as learning in the formative nature is what underpins these notions, however, in addition to this, considerations surely need to be made to the alignment of summative assessment (whilst it remains) and the impact that this has on what and how content is delivered in the dance class. Bridging the gap and finding the fluency between formative and summative assessment and as Brown (2015) also believes, having an embodied knowing in the digitized world appears to be the interlude which requires further exploration.

So why is dance so relevant to these skills? Dance provides opportunities for students and teachers to develop artistic and creative skills, collaborate, problem solve, synthesize, analyse and give significance to their own unique cultural experiences and understandings of themselves and the world around them, through dance (SCSA, 2019). This, combined with the use of technology, solidifies necessary learning experiences that will equip students with the fundamental skills required to navigate life in the 21st century.

Brown et al., (2015) identified the major learning outcomes for international dance curricula and relating them to what young people have said about their experiences may convey what is needed in future curricula development for both young students and teacher education. The 176 participants clearly revealed the power of dance in the informal, non-formal, and formal settings, and the significance of dance in their lives. The four themes and subthemes of: embodiment, culture, holistic development, and communication confirmed for the researchers the importance of dance education and its significance in the development of young students to do well aesthetically, academically, and socially.

Studying dance could be the way to success where students engage in creative activities, collaborate with others, and problem-solve ideas. Such practice teaches creativity, ways of thinking and communication, provokes imagination and possibilities, and is central to the arts/dance, but also vital to our rapidly changing world and required skills of the 21st century. (p. 8)

Dance is a subject which given the opportunity through teacher training and implementation into the classroom could significantly underpin the desired skill set of the 21st century. To further enhance this concept, a glance to the future will be highlighted.

Progressive Technology

Data driven processes have the capacity to link the physical body to the virtual body and globalise transmission and learning of movement (Vincs, 2017). Shifting representations of the body using technology requires consistent reflection on how to assess the dancing body. Figure 2.1 illustrates the speed with which technology-driven assessment methodology was developed in the first part of the 21st century.

Figure 2.1 is available at Redecker C. The Use of ICT for the Assessment of Key Competences . EUR 25891. Luxembourg (Luxembourg): Publications Office of the European Union; 2013. JRC76971 (p. 5). <https://publications.jrc.ec.europa.eu/repository/handle/JRC76971>

Figure 2. 1 Current and Future e-Assessment Strategies

Source: IPTS on the basis of Bennett, 2010; Bunderson, et al., 1989; Martin, 2008).Cited in (Redecker & Johannessen, 2013)

This relevant and timely piece of assessment analysis sits significantly alongside the assessment strategies predicted to be in use beyond 2020 embracing a collaborative multimedia assessment and learning environment using integrated assessments. A logical first part to the process with regard to assessment of dance in secondary education before further virtual realities (VR), mixed realities (MR), augmented realities (AR) and artificially intelligent (AI) arenas are adopted.

Using mobile technology and integrative technology for assessment is positioned amongst current scholarly perspectives in a modern educational context (Kurubacak & Altinpulluk, 2017). Mobile technology and augmented reality according to some, are set to be the most disruptive technology of our time (Kipper & Rampolla, 2012; Kurubacak & Altinpulluk, 2017). AI is beyond human modes of thinking and processing and there is an emergence of data analytics and business intelligence capabilities. There are new forms of human and machine interaction, such as augmented and virtual reality systems

and sensory technology. How these impact upon education and assessment is yet to be seen, especially considering the developments and research with blockchain technology to capitalise on the emerging technologies (Department of Industry Science Energy and Resources, 2020)

There is a fundamental change to the nature of embodiment for dance, due to the fact that the relationship of the body with technology is changing and that there is a change in the nature of connectivity. Embodiment is as a central theme of the next generation, where VR and MR are combined, suggesting that the future of embodiment in the light of 4.0 technologies is one of the major research questions of our time, not just for dance, but all industries (Vincs, 2017). To continue to shape the future of dance education, research driven engagement through practice led research needs addressing as the future of assessment of the representative body could be somewhat challenged.

Critical, historical and theoretical perspectives are embedded within the performing arts and emerging digital environments. The ways digital technology is used to engage and connect with audiences, how artists use technology for creative assistance, aesthetic and documentation of their works and how transmission is sought to diverse localities, is commonly mediated through digital technologies (Whatley et al., 2018). Video and computer applications can challenge the transient nature of dance performance, with longstanding debates surrounding the reality of live performance, thus informing a very current and topical debate around the use of video for documentation, cultural heritage and digital preservation (Reed, 2018). This research contributes to a discussion around the capture of an ephemeral performance in supporting a fair assessment of dance performance.

An acknowledgement to the developments in technology in the surrounding context suggest that research in the field of dance education requires consistent investigations to keep pace with what is happening globally and within the industry as practice is ever advancing, requiring education to maintain a position of adaptive change. The development of AI, MR and VR technologies 4.0 are beginning to infiltrate and will ultimately dominate and shape culture, industry, politics and eventually, education (Department of Industry Science Energy and Resources, 2020). Any methods

incorporating technology developed today need to take into consideration what the current issues are and how these new technologies will navigate future directions and impact on future generations and their unforeseen roles of the future (Stinson, 2016b; Webb et al., 2018).

Further Discussion

After reviewing the literature, it is evident that navigating the next step in pedagogic dance education requires having an embodied understanding of curriculum and applied technology to provide an alignment of skills and goals for the 21st century to bridge the gap between education, assessment, policy, industry and culture. Embodiment, culture, technology, considered reflection, authenticity and reliability, collaboration and peer support, efficiency and ease appear to be central themes surrounding dance and assessment. The value and place dance maintains' within education is not the focus of the investigation. Nonetheless, it can be interpreted through the research, that assessment that supports the dancer through an awareness to their cultural experience, holistic development and confidence, whilst engaging in a practice of communication and expression, lie at the heart of what is considered of value and worth in dance education. Without these values at the heart of assessment there may possibly continue to be a disconnection between teaching, learning and assessment.

With so many issues surrounding this topic I am still left to consider how significant the understanding of best practice is as it relates to assessment and how it plays into the realm of value, significance and engagement with dance. Also, bearing in mind the development of progressive technology and the impact this will have on industry and culture, the values we take forward with regards to the body and dance, and how we monitor and assess students becomes an interesting topic for consideration. I strongly affirm that we must first go through the process, before any final destination and end product is reached, which remains elusive yet still definable.

As progress is made into the digital revolution of the 21st Century, cultural shifts, and arguably a cultural revolution is now taking place and reshaping interactions within society, and dance. The value dance has as an artistic practice in secondary education in

Australia encompasses and acknowledges the interrelationship between practical and theoretical aspects of dance: choreography, performance and appreciation. Whilst having the opportunity to develop their practical dance skills, at the core, students have an appreciation for how it is culturally valued and historically derived. These current and changing contexts in society and culture, and changes in skill set needed to accommodate the demands of the economy and population and nature of work are not disparate from teaching, learning and assessment.

As already discussed, the summative assessment is derived from aged and practiced models of assessment, and one which dominates content delivery. The hierarchy in teaching and assessment in the dance class is not viewed favourably by modern dance educators and researchers. Community, collaboration and reflective practice, whilst harnessing creativity, problem solving and use of technology/ICT is deemed necessary in generating relevant curriculum, in the midst of what is happening globally (globalisation, digitisation, automation) whilst supporting the creative process and documentation of artistic practice in dance and embodied understanding of technology in the course. The gap now lies between gaining an understanding of how dance practice underpins and aligns assessment with the taught and desired curriculum of the 21st century.

The more progressive and continuous style of formative and curriculum inclusive assessment is something which is largely left up to the choice, skill set and resources of the class teacher. A review of current practice and pedagogic models to match changing contexts may be needed. The benefits of using technology in formative assessment in dance relate to gaining an embodied understanding of technology within the course by embedding digital literacy and 21st century skills to accommodate and harness peer support, online communities and engagement and collaborative learning and assessment, thus matching the skill set of the modern learner to the desired curriculum. Teacher education, moderation, consistency in standards, recording and access to information are also formative benefits facilitated and enhanced through the application of technology. These formative benefits can also be seen to link to and support summative assessment. The findings also reveal that validity, reliability, authenticity, and feasibility are positive key findings for other courses with a practical

component for large scale external assessment, thus leaving space and exploration for the assessment of dance.

There appears to be purpose between both formative and summative assessment models and the application of technology to both. As the understanding and appreciation of dance practice expanded, the learner became central to creative enquiry. Concurrently, the technological advancements descended, which generated implications to dance and education, where a paradigm shift became apparent and is slowly being adopted. As we continue to reflect on our past and create our future as dance educators, many new progressions are now taking shape. These include: the value of reflective practice, collaboration and peer support in a digital environment, digital literacy, progressive technology and cultural relevance. How dance educators mediate the curriculum with their students to deliver what is best suited to facilitate the demands of the curriculum, an ever-evolving culture, authentic and reliable forms of assessment and individual learners needs, is a challenge which remains largely unexplored for dance. Technology may be the key for finding balance and fluency between formative and summative assessment. That outcome is yet to be confirmed, however, what is a given, is the continually changing contexts of dance in society and how it impacts on what, when and how content is delivered and ultimately assessed. The pace of educational policy and assessment to match the desired and changing contexts of dance education appears to be lagging behind.

Regardless of which side of the argument dance educators align with regarding formative and summative assessment in the Arts, or are placed somewhere in the middle, the fact remains that for dance in Australia and many other countries, governments place emphasis and value on high stakes summative assessment which grade and rank students. I argue there is a great deal of importance in exploring how these two schools of thought can be accommodated and possibly challenged. Arguably, assessment is often regarded as external to teaching and learning, however, it has a tendency to dominate content delivery (Newhouse, 2012b). What is becoming increasingly relevant in the digital age, is the gap between the purposes of both summative and formative assessment in dance and the interplay, or lack thereof between them. When this anomaly is coupled with the modern learner and skill set

needed in a technologically progressive environment, exploration into new assessment methodologies is needed. Do dance educators create a cohesive and more aligned practice of formative and summative assessment, or adopt an entirely different approach? I hope my research will open up this debate further. Based on the findings and interpretations from the literature review, I have created a conceptual model which will be used as the analytic drive behind the collected data.

Conceptual Model Informed by the Literature Review

Figure 2.2 depicts the findings from the literature review and illustrates the interconnected aspects of curriculum and policy, pedagogy and technology, and how these aspects are influenced by historical and cultural practices. The interconnected aspects of the conceptual framework are further elaborated in Figure 2.3.

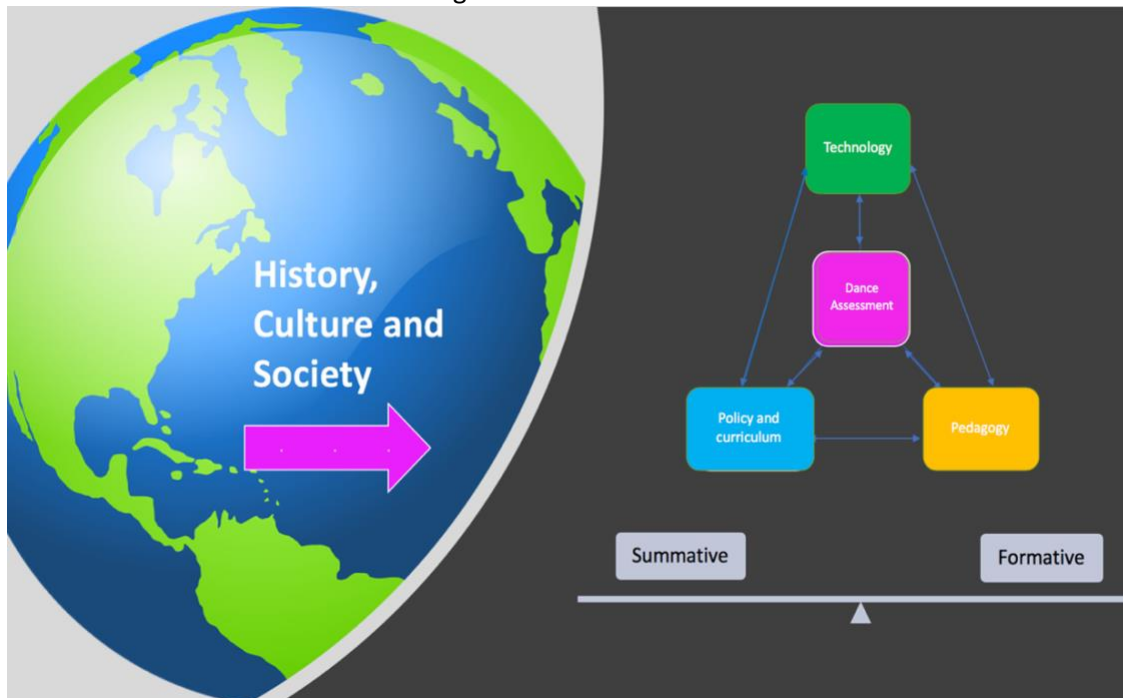


Figure 2.2 Conceptual Framework Developed from the Literature Review

Picture of globe sourced from Pixabay (2012).

History, Culture and Society	Modern/desired Practice in Dance Education and Assessment	Parameters of Assessment	Digital Technology in Formative and Summative Assessment (Technology)	Further Understanding and Research Required. (Dance Assessment)
(Influences)	(Pedagogy)	(Policy and curriculum)		
The value and place of dance in education ➤	Formative approach to continued learning and assessment rather than summative final evaluation ➤	21 st century skills ➤	Moderation ➤	Standards, moderation and marking ➤➤
Summative model of assessment ➤	Collaborative community, creativity, problem solving ➤	Authenticity, reliability, validity ➤	Training ➤	balance and alignment of summative and formative assessment ➤➤
Hierarchy in teaching and assessment ➤	Embedded technological practice in TLA, ➤	Marking, Moderation and training ➤	Validity ➤	assessment of dance processes – connection to culture and industry ➤➤
New roles of educators and perspectives in dance education for 21 st century ➤	21 st century skills ➤➤➤➤	Alignment of exam to course – taught curriculum ➤	Reliability ➤	reflective practice and documentation ➤
Societal changes and future employment ➤	digital literacy and ICT ➤➤	Record of achievement ➤	Feasibility ➤	current and changing contexts - future values ➤
Globalisation, digitisation, automation ➤	Matching skill set of learners to curriculum generation ➤➤	Ranking, grading and standards ➤	Reflective practice ➤	Embodiment – technology 4.0 – next generation ➤
Modern youth exposed to vast amounts of technology ➤➤➤➤	Understanding assessment and standards for all ➤	Summative and formative – process and product assessment ➤	Consistency in standards ➤	
21 st century skills ➤➤➤➤	Removing barriers to learning ➤	Summative and formative – process and product assessment ➤	Alignment ➤	
Policy ➤➤➤➤	reflective practice – understanding actions and meaning – key to personal understanding and community learning ➤	Summative contradictory to arts practice ➤	Access, record, analyse ➤➤	
Historical underpinnings of assessment ➤➤➤➤			Digital literacy and 21 st century skills – modern learner and culture ➤➤	
Pedagogy and cultural relevance ➤			Creativity, problem solve, ➤	
			Collaborate ➤	
			Engagement ➤	

Figure 2.3 Details of the Interconnected Aspects of the Conceptual Model

In Figure 2.3 above, the colour of the arrows relates directly to the coloured text headings and thus reveal all of the interconnected aspects of: formative and summative uses of technology in education (green), the dance curriculum and policy (blue), the modern and desired pedagogical approach to dance education (orange), the historical, social and cultural influences (pink) around the aforementioned and thus, the gap in the literature, where further research is required (black). Figure 2.4 below further illustrates the focus of the research and the gaps in the literature filled by new knowledge from the current study.

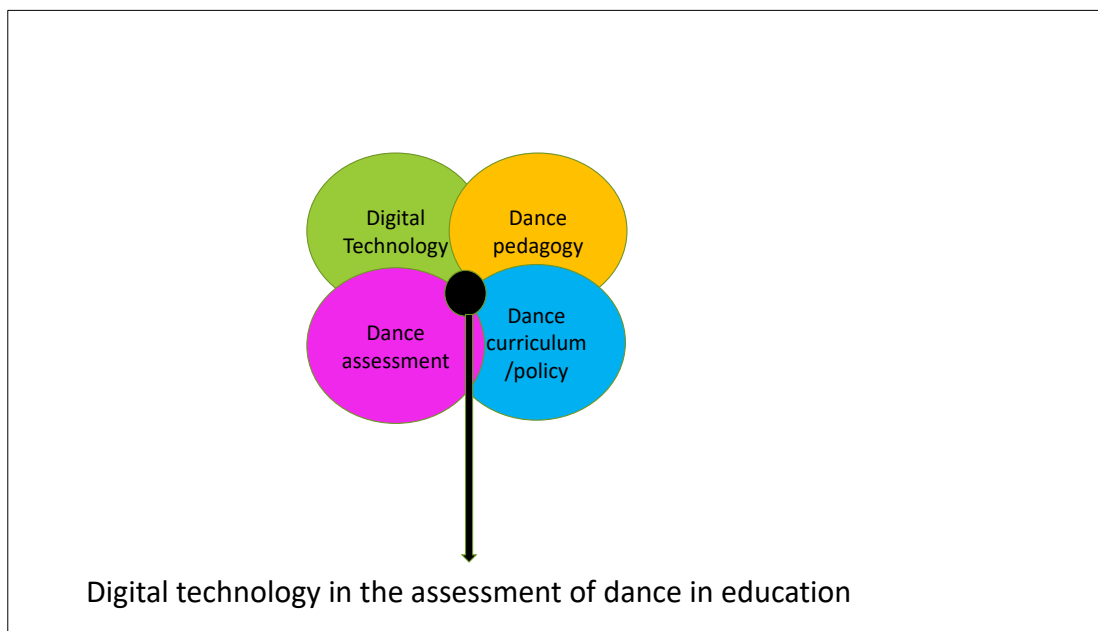


Figure 2.4 Focus of the Study and Contribution to New Knowledge

By adapting learning, teaching and assessment methodologies, further insight will be gained on how technology facilitated experiences can reinforce learning and assessment in the applied curriculum. The interconnected aspects of policy, dance assessment and technology and the surrounding influences will also be explored. This research is not only about the use of technology in the dance examination and the preparation for it, but also the results from the marking of the two different methods and similarities and differences in data. With the main problems and associated statistics still in place, it is evident that greater scrutiny is needed into the reliability of marking and the comparability of the results of the multimodal assessment methodologies.

Digital enhancement of the complete practical dance examination could just be the central motif to challenging the entire notion of the final, on the spot examination and its fairness and/or provide strategies to align and balance assessment both for and of learning for dance performance. Hearing the voices of those within the field is fundamental to gaining an understanding on how their experiences and understanding are affected, and thus effect assessment. Through participation in substantial considered reflection and gaining a more shared understanding of the assessment using the developed technology, those involved: teachers, markers and students, will be given

a voice to share their experiences, thus, new knowledge will be gained and there will be a significant contribution to new knowledge for dance assessment in WA from this study.

Summary

The literature review highlighted gaps on embedded technological practice in dance education, characterised by integrated learning, teaching and assessment. Further research on digital assessment of practical subjects is necessary to support the changing technological requirements of the curriculum and align assessment with industry and curricular expectations. Technology has made it possible to integrate assessment of knowledge, practical skills and high-order thinking to the point where quality assessment of complex performances are feasible in both formative and summative evaluations. Assessment that genuinely supports learning requires implementation of powerful technology in the classroom to continuously provide students with relevant and contemporary learning experiences for extended periods of time (Pellegrino & Quellmalz, 2011). The next chapter discusses the design and scope of this study in detail.

Chapter 3: Methods and Methodology

The discussion below describes and justifies the research design. It highlights the connection between the conceptual model, theory and methods, participant recruitment, data collection and analysis techniques, and outlines the ethical considerations and limitations of the study. The literature review focused on past and present approaches to dance assessment, ICT in dance education and assessment, and approaches to high-stakes digital assessment in other practical subjects. A constructivist approach to assessment and the use of technology emerged as dominant perspectives (Hsia et al., 2016b; Newhouse, 2012a; Stinson, 2016a, 2016b; Webb et al., 2018; Williams & Newhouse, 2013).

Theory and Paradigm

Traditional research paradigms are often referred to as the big four: positivism, post positivism, critical theory, and constructivism/interpretivism. The defining difference between positivism and interpretivism is that positivists believe knowledge is discovered and that it is unambiguous, accurate, objective and efficient. Results are deemed true if they are probabilistically consistent and empirically verifiable (LeCompte & Schensul, 2010). Conversely, interpretivists are considered relativistic, because they believe that knowledge is developed through social interactions between people and their world. Truth is not discovered but constructed, thus, individual and group social constructions are not true in a fixed sense, but conversant, and emergent views of reality and ways of being are developed through time and shifts in discourse (Guba & Lincoln, 1994). Whilst these research paradigms oppose one another, pragmatism offers a different understanding of how knowledge is gained and understood.

Pragmatism

Unlike absolutists and relativists, John Dewey, an American philosopher, educational reformer and leading proponent of pragmatism, contended that knowledge arises from active adaptation of humans to their environment. Truth is constructed as a result of solving problems. John Dewey's philosophical standpoint is predicated on human experience and the process of inquiry as it relates to context (Hickman et al.,

2009). According to Dewey's pragmatic theory, honouring the creative, artistic and explorative aspects of human experience is fundamental to truth. Despite some resistance to his theory of learning, Dewey's work is considered favourably by educators, politicians, scientists, sociologists, philosophers and historians, and has been used to enhance educational organisations around the world (Hickman et al., 2009). Education is regarded as both a practice-oriented domain and an academic field, particularly where Anglo-American customs have influenced educational reviews in the United States, Canada, New Zealand, and Australia. Thus, the practical problems encountered by working educational professionals frequently trigger further investigation (Corbett & Hill, 2018).

The current research was motivated by a desire to find practical solutions for embedding technology in dance assessment, within a system of education where the use of technology in practical forms of assessment is at the forefront of research (Tarricone & Newhouse, 2016; Williams & Newhouse, 2013). This pragmatic philosophy is aligned with my agenda and research design, where the approach was determined by a need to understand the experiences and perceptions of participants and influenced how the research was conducted and interpretations were made. A pragmatic paradigm for social inquiry often underpins mixed methods research (Morgan, 2014; Teddlie & Tashakkori, 2010), so although pragmatism was the framing paradigm, the largely interpretive nature of this research is closely related to constructivism.

Constructivism

Constructivist theory in teaching and learning embodies culture, literacy, learners' wellbeing, context, learners' knowledge, interpretation of reality, and personal experiences (Mogoashoa, 2014). Constructivist learning environments provide opportunities for problem solving, collaboration, critical engagement with tasks and evaluation of one's own learning (Begg, 2015; Binkley et al., 2012; Griffin et al., 2012). Constructivists and pragmatists construct their reality from their environment and is therefore steeped in culture (Garrison, 2008; Hickman et al., 2009). In a constructivist learning environment, technology has the capacity to enrich students' experiences of tasks and activities and progressively scaffold their understanding (Anderson, 2016;

Dunleavy & Dede, 2014; Newhouse et al., 2002). Therefore, the integration of ICT requires authentic assessment as an integral part of curriculum and pedagogy (Nastiti, 2018).

Wicks et al. (2008) demonstrated how the different contributors to their book and practice referred to a participatory worldview and highlighted Fricke's particular perspective:

Any situation, any context, any institution, or structure we find ourselves in is just a historical moment within a process of permanent change. This means we are coming out of the past going into the future. Everything is changing and may be changed. Humans and society are open to the future (p. 24).

Such a participatory worldview underpins my research from the standpoint of a constantly shifting and renegotiated reality. My years of working as a creative dance educator led to me valuing the process of change and discovery and articulating my personal viewpoint as it relates to the world around me, including shifts in technology, dance, education, the community, and their inter-relationships. Moreover, my interpretations of reality associated with dance education, technology, assessment and the global community, fit seamlessly with the continually changing connectedness between culture and society. Constructivism is salient to framing this research when considering not only the participatory worldview I identify to framing the study, but also when supporting the profile of the modern learner in their interconnected and technologically facilitated environment. Constructivism not only supports contemporary pedagogical orientations in the dance classroom, it is also used as an explanation of my own orientation in seeking to investigate pedagogical practice and learning/assessment outcomes for Dance students. There is therefore a relationship between these intertwining and complimentary themes which play out throughout the entire thesis.

This theoretical lens helped to shape and define the research questions and research design. Corbett and Hill (2018) described Bourdieu's acknowledgement of structural constraints in social enquiry:

It is virtually impossible to imagine action research or any other pragmatist-inspired form of social inquiry that is not located in the contested space of politics and theory, precisely because this sort of work is necessarily and explicitly aligned with the messy and inevitably political world of practice. Bourdieu puts this rather nicely when he asserts that while agents have *an active apprehension of their world*, that *they do construct their vision of the world*, and that the resulting construction is always carried out under structural constraint (p. 112).

Our views and the actions we take to deliver the curriculum are inevitably bound by hierarchy, politics, and policy in education, a concept that emanates from an acknowledgment of truth as seen by critical theorists.

Acknowledgment of Critical Theory

The parameters and constraints of aged and practised assessment against the defining and progressive practice of technology and the global impact it is having on shaping our future, as highlighted through the literature review (Brown, 2015; Stinson, 2016b) inform this research and could be termed critical theory. Critical theorists suppose that their analysis and interpretation of cultural products is shaped by the context in which they were created and re-created (norms, behaviours, objects, symbols, words, etc). The critical theorist questions the established philosophies and belief systems and accepted truths, where people exist in a world where irregularities and unequal power structures are prevalent (McLaren, 2009).

Marxism, postmodernism and feminism are easily identifiable examples of critical theory. They reveal and oppose the interaction of political, economic and social structures which are dominant in a society. Empirical demonstration is the foundation of truth seeking as argued by the positivist, whilst critical theorists suggest that truth resides in and is created through relationships of power (Popkewitz & Fendler, 1999).

This bears relevance to certain aspects of the surrounding context regarding the historical, political and cultural influences at play when considering the origins and nature of dance assessment. Dance all over the world is immersed in every culture, with vast and dominant political, historical and thus theoretical influences on education. This undeniably impacts on how the dance curriculum is taught and ultimately, assessed. Although I am a pragmatist, and this study is largely based around the practice of dance education in WA, critical theory and issues of power and dominance cannot help but shape what is going on within dance and dance education within schools and had to be acknowledged.

Reflective Practice

Philosophical assumptions are what shape research projects (Kuhn, 1962, as cited in Bradbury, 2015), and accordingly, my own assumptions and inherent lens as an early researcher called for reflective practice in the current investigation. Gonnerman, O'Rourke, Crowley and Hall (2015) believed this was paramount if all involved are to be heard and valued, regardless of their differing philosophical assumptions (Bradbury, 2015). Throughout the literature review, reflective practice was a defining feature of best practice in dance education – learning about the actions one takes in certain contexts to inform future action and learning (Risner, 2017; Tembrioti & Tsangaridou, 2014; Warburton, 2002). Some scholars reported increased critical insights and engagement with tasks (Doughty et al., 2008; Doughty & Stevens, 2002; Leijen et al., 2009; Newhouse et al., 2002; Smith-Autard, 2003; Williams & Newhouse, 2013) when technology was combined with reflection. Enhanced articulation and understanding of participants' actions through reflective practice also imposed an obligation on the researcher to constantly review the largely conceptual and somewhat theoretical underpinnings.

A Blended Perspective

My work as a modern pragmatist falls thematically into education, technology and dance as an art form. Like with traditional pragmatism, these topics are deeply rooted in the overarching involvement of culture. The pragmatic approach helps to shape and define the research within a shifting context where knowledge is sought.

Constructivism promotes collaboration, problem solving and critical thinking (Dickson & Akwasi, 2016; Mogoashoa, 2014; Wilson, 1996). However, the findings may be shaped by the interconnected aspects of dance, education and the preceding values inherited by social and political constructs of a previous era. By implementing a digitally facilitated learning and assessment experience with the students, teachers, curriculum specialists and examiners in their established environments, an analysis of its success can be conducted. Through this interaction I hope to gain a better understanding of the perceptions and experiences from the people in context, with some numerical data in support of the findings. This gives a more detailed understanding of the research questions and results, leading to a balanced conclusion on the strengths and limitations to digitally enhancing the assessment of dance performance for examination (Cohen et al., 2011).

Overview of the Study

Aimed at implementing digitally enhanced ATAR dance assessment by exploring the use of mobile technology in practical summative dance evaluations, this study adopted a mixed methods approach. It measured exam scores derived from different methods of assessment, captured the performance of participants, and attempted to alleviate some of the problems associated with the current mode of assessment. Thus, introduced technology to support learning and assessment in dance. Previous research undertaken at ECU uncovering the ways in which technology can be used to support high stakes summative assessments for subjects with a practical component (Newhouse, 2011, 2012b; Newhouse & Cooper, 2013; Newhouse et al., 2011) influenced the design of this study.

Examining the assessment environment was fundamental to understanding the interrelationships between curriculum, pedagogy and assessment. The study also required a grasp of participants' experiences and feelings about technology in order to identify issues around current assessment in dance, the application of existing technology, and the new method of dance assessment with the DAapp. This was essential for determining best-practice use of technology in assessment (Masters, 2013) in order to answer the research questions.

Mixed Methods Embedded Design

This study entailed collecting predominantly qualitative data and a smaller amount of quantitative data in a mixed methods design, also termed an embedded design. Mixing different sets of data at the design stage, with one type of data embedded in a methodology framed by the other, is considered appropriate for mixed methods research (Creswell & Plano Clark, 2011). In this instance, quantitative data were embedded in a qualitative methodology. The conceptual model generated from the literature review (see Figure 2.2) was used to inform analysis. The convergent parallel design using both qualitative and quantitative methods was analysed separately and then compared to assess convergence. Once all quantitative and qualitative data was complete and analysis undertaken, an overall analytic construct of the data was completed to demonstrate the phenomena around which all findings relate.

Methods and Analysis

Qualitative data were gathered from the surveys and interviews and coded according to identified themes (Cohen et al., 2011). Some codes were predetermined by the survey questions (LeCompte & Schensul, 2012), whereas others emerged during the coding process from phrases and sentences used by participants in the interviews and open-ended survey responses. The participants comprised key stakeholders – students, teachers, examiners, and curriculum specialists (some employed in multiple roles). The data comprised the perspectives of those involved and were triangulated at different points during the collection process to ensure reliability, thereby drawing on the traditions of interpretive research (Denzin & Lincoln, 2002; LeCompte & Schensul, 2010; Walford, 2001). Stakeholder perceptions were fundamental to identify issues associated with dance assessment, the use of existing technology, and the new dance assessment application. Students were given the opportunity to explore the DAapp by taking part in a digitally enhanced examination as well as formative and reflective activities, such as an alternate interview task and marking.

A small amount of quantitative data was collected to support the qualitative results. This involved measuring candidates' scores from both the original and digitally

enhanced assessments, comparing the results, and interpreting discrepancies between the two methods. Previous research on digital assessment showed that the reliability of markers' scores increased compared to live performances (Newhouse, 2012a), clarifying the role of technology, and at the same time, determining the validity, reliability and authenticity of the construct itself. A survey was administered to identify the attitudes and perceptions of the students, teachers and digital examiners in relation to their experiences using the DAapp (Bell, 2014). Analysis of the open-ended responses, along with descriptive and frequency statistics from the Likert scale, were used to interpret the data and draw inferences.

The combination of qualitative and quantitative methods assisted identification of the strengths and limitations of technology in summative dance assessments. This approach was also used to enhance the performance of participants, alleviate some of the problems associated with the traditional form of assessment, and equip dance students and educators with technological skills to support learning and assessment. At various data points, analysis allowed inferences to be drawn from the numerical and qualitative data (Cohen et al., 2011).

Data Collection

A mixed methods approach, as outlined in Table 3.1, was aimed at understanding the thoughts and reality of the individuals in their environment and how they shifted after engaging with the technology and new assessment method. Further analysis determined if scores derived from the new method were consistent and verifiable with those of the traditional marking method. The table below illustrates how the research questions were addressed by the data collection and analysis.

Table 3.1 Methods and Research Questions

RQ1. In what ways can digital technology in the assessment of dance be used to support the current form of assessment?	
Method	Analysis
<p>Digitally Enhanced Examination</p> <p>Student exploration of DAapp use to support assessment. Alternate Interview undertaken by students and seen by examiners (for discussion and insight) plus exploration of DAapp for exam preparation/reflection to support teaching and learning.</p> <p>Markers use designed technology to facilitate exam, recording/capture of performances, task selection, interview question selection, marking and moderation.</p> <p>All interview data from stakeholders pre and post assessment.</p> <p>Surveys: students, teachers, examiners – post assessment.</p>	<p>Results of student performance examinations and markers scores via discrepancy analysis</p> <p>Student survey and focus group discussion</p> <p>Inductive answering and reasoning through linguistic engagement and a look into nuances of meanings people assign to phenomena. Codes and themes patterned across data set, analysed, and interpreted.</p> <p>Deductive answering through numerical data (surveys, descriptive and frequency statistics, and comparative exam scores).</p>
RQ2. Are the results of assessing the digitally enhanced dance examination consistent with assessing the original, and what are the likely causes of discrepancies?	
Method	Analysis
<p>Live marking using the DAapp with usual format of dance exam.</p> <p>Digital marking of exam (from anywhere) with additional chance to view and mark modified interview section.</p>	<p>Deductive answering through numerical data from exam scores.</p> <p>Comparison of similarities and differences from the different assessment methodologies - markers scores interpreted via discrepancy analysis.</p>
RQ3. What are the perceptions of the student, teacher, and analytic marker of the digitally captured dance performance for assessment?	
Method	Analysis
<p>Semi structured interviews: curriculum specialists, senior markers, and teachers – pre-assessment.</p> <p>Digital markers - post assessment.</p> <p>Focus group: students – post assessment</p> <p>Surveys: students, teachers, examiners – post assessment.</p>	<p>Inductive answering and reasoning through linguistic engagement and a look into nuances of meanings people assign to phenomena. Codes and themes patterned across data set, analysed, and interpreted.</p>

Participants

Table 3.2 presents an overview of the participants, their usual academic roles, and what they were asked to do as part of the project. The codes using LM and DM

before a number represent the live marker(s) and digital marker(s) respectfully and their assigned number as part of the code to protect their true identities.

Table 3.2 Participants and their Roles

Participant pseudonym/code	Usual academic role	Part in research
Stella	Dance curriculum specialist, trained dance teacher	Preliminary Interview
Alex	Dance teacher, experienced ATAR Dance marker, dance curriculum specialist	Preliminary Interview
Lottie	Dance Teacher, experienced ATAR Dance marker, dance curriculum specialist	Preliminary Interview
Natalie	Dance Teacher, experienced ATAR Dance marker,	Preliminary Interview
LM2 Lilly	Dance Teacher, experienced ATAR dance marker, dance curriculum specialist	Preliminary Interview Live marking using DAapp
LM3 Lena	Dance Teacher, experienced ATAR Dance marker, dance curriculum specialist	Preliminary Interview Live marking using DAapp Y 11 classroom teacher Workshop Survey
LM1	Dance Teacher, experienced ATAR Dance marker	Live marking using DAapp
LM4	Dance Teacher, experienced ATAR Dance marker	Live marking using DAapp
LM5	Dance Teacher, experienced ATAR Dance marker	Live marking using DAapp
LM6	Dance Teacher, experienced ATAR Dance marker	Live marking using DAapp
DM1	Dance Teacher, experienced ATAR Dance marker	Digital marking using DAapp from home or office Interview Survey
DM2	Dance Teacher, experienced ATAR marker	Digital marking using DAapp from home or office Survey
Students A – T	Part of Year 11 ATAR Dance cohort from one School in WA.	Perform school based practical dance assessment (based on ATAR Dance Exam) with DAapp used to capture performances. Workshop Survey Focus Group Discussion - Students A, E, I, H and K

Key stakeholders in the first part of the investigation, Stella, Alex, Lena, Lilly, Lottie, and Natalie, were experienced teachers, examiners, markers, and curriculum specialists for ATAR dance (Lena, Lilly, Lottie, and Natalie were all from the same school, whereas Alex and Stella were from different schools and departments). Based on their knowledge and experience, the participants made up a purposive sample from a small population to provide greater understanding (Cohen et al., 2001). They were all experienced in the field of secondary dance education and assessment in WA. The participating school was an independent government school in WA – the teacher (Lena) and the students were drawn from the Year 11 cohort. The students took an exam in the usual format, and at the same time, the DAapp captured their performances. They were aware that their exam would be marked live and digitally by more than one marker and the marks compared. After the assessment, Lena and the students attended a workshop that explained how the DAapp could be used in practical examinations to enhance reflection, marking and the interview. They were also asked to complete a post-assessment survey, and in addition, some students participated in a focus group discussion.

The markers of the live examinations were experienced teachers and markers of the ATAR dance course. Two of them, Lena and Lilly, also took part in preliminary interviews. During the live examinations, the markers were asked to view the performances and enter their scores and feedback into the DAapp.

The other two markers were also experienced dance teachers and ATAR markers but did not mark the live examinations on the day of the examinations. Instead, they were asked to mark the digitally captured performances embedded in the DAapp at a later date. The digital markers were also required to enter their scores and provide feedback on the performances and the functionality of the DAapp. Following this, the digital markers completed a survey and one digital marker participated in an interview. Participation of the teachers, markers and curriculum specialist, all with extensive knowledge and experience of secondary dance education in WA, strengthened the reliability and consistency of their assessments.

Instruments

The instruments developed to assess the benefits and limitations of digitally enhanced dance assessment are discussed below in detail.

Interviews

Prior to the digital examination, semi-structured interviews were administered to all key stakeholders, comprising teachers, markers and curriculum specialists. The purpose was to identify any issues associated with the practical WACE dance examination and the use of technology. The preliminary interviews were used to gather rich qualitative data and inform the subsequent investigation. A semi-structured interview was also undertaken with the digital markers and the students in a focus group format after the assessment to obtain their perceptions of the DAapp method. The open-ended, semi-formal nature of the interviews encouraged participants to freely express their experiences, perceptions and attitudes. The group interview with the students and individual interviews with examiners post assessment served to extend the findings and expand the themes (Bell, 2014) by allowing them to voice their experiences and concerns. Responses to the interviews were recorded, summarised, categorised and analysed using thematic analysis and coding, widely acknowledge as appropriate in qualitative analysis for ordering the data (Cohen et al., 2011; Denzin & Lincoln, 2008). Initial codes created from phrases and sentences spoken by participants were grouped to form the basis of next-level analysis and inferential categories. Aside from providing rich data, the post-assessment interviews with students, teachers and examiners were valuable for triangulating the findings from the preliminary interviews, surveys and examination scores. This allowed for a connection between the qualitative and quantitative data for subsequent analysis and interpretation.

Interviews are universally considered an appropriate method of data collection in social science research (Bell, 2014). Prior to the interviews, participants were informed about the purpose and content areas to be discussed and advised that they were free to answer or decline any questions. They provided their written consent for recording the interviews and were notified that they would be deidentified and their responses only used for the purpose of the research.

Surveys

The surveys used for this study were adapted (for the context of this study – ATAR Dance) from a survey previously used by CSaLT at ECU for investigations into digital forms of performance assessment (see appendix E and G). The student survey was the final data collection instrument administered to all students, with the exception of those who also took part in the post-assessment focus group. Some questions were open ended, while the majority adopted a Likert, ordinal scale to determine the strength of participants' feelings and attitudes towards the design and implementation of the DAapp (Bell, 2014). The feasibility of using technology in dance assessment was also addressed in the surveys to identify any technical, functional and pedagogic issues. Questions around self-reflection, marking and analysis of the exam were included to determine the ways in which the DAapp method could assist in preparations for the practical dance examination and how the participants felt about their experiences. In addition, their perceived skill levels and current engagement with technology in performance were sought to determine the value and future potential of ICT in assessment.

The teacher and digital markers also completed a survey at the conclusion of data collection. Again, some questions were open-ended, with the majority adopting a Likert, ordinal scale to determine the strength of their feelings and attitudes towards the design and implementation of the new assessment method using the DAapp. The survey also addressed reflection and analysis of the exam, as well as their perceived skill levels and current engagement with technology in performance. Prior to the surveys being administered, a pilot questionnaire was distributed to a number of colleagues to ensure reliability (Bell, 2014). All questions and responses were placed in a table to draw out the emergent themes across the data set, an example of which is outlined below in Table 3.3

Table 3.3 Sample of Predetermined Codes for Survey Question 2

Codes	Perceptions	Sample Response			
Subcodes	Easy to use. Good Enhancement. Useful reflective tool.	3/3 SA. 1/3 A, 2/3 SA. 3/3 A.			
Digital enhancement of practical dance assessment using the smart technology app					
a)	It was easy to use digital technologies for the structured improvisation assessment.	Strongly agree	Agree	Disagree	Strongly disagree
b)	The videos and commentary were a good way of enhancing assessment tasks 3 and 4 (modified).	Strongly agree	Agree	Disagree	Strongly disagree
c)	Digital technologies are useful tools for me to reflect on student practical performances	Strongly agree	Agree	Disagree	Strongly disagree

Analysis of the surveys and interviews was informed by the conceptual model derived from the literature review (see Figures 2.2 and 2.3), thereby lending support to the axis around which several categories and subgroups were positioned, ultimately connecting the qualitative and quantitative findings (later presented in Chapter 7).

Dance Performance Examination

The purpose of this investigation was to digitally capture the performances and employ a method of using the DAapp to assist in the practical performance examination and the preparation for it. By endeavouring to maintain reliability and validity of the assessment construct with digital enhancements, it was imperative that the original format for the purpose of the school-based assessment, remained as close to the actual ATAR Dance examination as possible.

Dance Application Prototype

To obtain answers to the research questions, my associate supervisor, Dr Alistair Campbell and I set about repurposing and further developing an assessment application prototype to support digital enhancement of all aspects of the WA ATAR dance assessment. The mission covered practice and preparation, examination, marking, moderation, and reflection by students, teachers and examiners. The prototype was based on an existing application developed by the Centre for Schooling and Learning Technologies (CSaLT) at Edith Cowan University in Western Australia. It was previously

used in a pre-service teacher training course and was part of a large research project for Education in WA, focusing on digital forms of performance assessment. In this study, the goal was to enable digitally enhanced assessment of the entire process in the context of dance; and ascertain its feasibility, strengths and limitations. Assessment tasks were created and embedded in the application for Part 3, the structured improvisation (see Appendix B), and Part 4 of the examination, the interview (see Appendix C). The marking keys for all parts of the examination were embedded in the application. An additional feature of the prototype was the ability to view the analytic marking key alongside the videoed performances, together with the assigned marks and feedback from examiners. All the marking keys (see Appendix D) and tasks were sourced from the participating school and teachers.

The mobile device was able to capture a usually transient performance together with feedback from markers, designed to enhance the transparency of live marking and moderation and encourage student engagement in learning and assessment. In addition, it provided markers with a tool for recording student performances and achievements in an organised, paperless environment, and generate fair, valid, and explicit results.

Dance Performance Examination Design Brief

The dance performance examination design brief and details about the examination were derived from the ATAR dance syllabus (p. 15, 2016) and informed the school-based assessment, as shown in Tables 3.4 and 3.5 below.

Table 3.4 Practical Dance Examination Information

Time allocated for examination: 25 minutes
Provided by the candidate
Music recording for Performance 1 (including a back-up copy).
Props that are limited to what the candidate alone can carry and set up within 60 seconds.
Two copies of the Statement of choreographic intent.
A signed Declaration of Authenticity.
Provided by the supervisor
CD player.
Chair for the interview.
A warm-up room.
Paper, pencils.

Additional information

The set solo materials, including a DVD and CD with choreographer's notes, will be sent to schools in the year preceding the practical (performance) examination.

The candidate is to work within the marked performance area.

The time allocated includes transition time.

The markers will stop the preparation or performance after the maximum allocated time has elapsed for that component.

Table 3.5 Practical Dance Examination Design Brief

Section	Supporting Information
Performance 1 Original solo composition in genre of choice (35% of the practical examination). Preparation: 60 seconds. Performance duration: 1½–3 minutes.	The candidate will perform an original solo composition in their choice of genre. On entry, the candidate will be asked to declare any props to be used during the performance. The candidate will commence the original solo composition within 60 seconds of entering the examination room.
Performance 2 Set Solo (35% of the practical examination). Preparation: 90 seconds. Performance duration: 2-4 minutes.	The candidate will have 90 seconds to prepare for Performance 2. This preparation time can include time for organisation of the space and attire. The candidate will perform the set solo which is in the contemporary genre.
Performance 3 Structured improvisation (20% of the practical examination). Preparation: 7 minutes. Performance duration: 30 seconds–2 minutes.	The markers will provide suggestions for Performance 3, the structured improvisation. The candidate will have 7 minutes to prepare a structured improvisation which is based on the markers' suggestions in relation to Performance 1 and/or Performance 2.

Section	Supporting Information
Interview (10% of the practical examination). Duration: approximately 4 minutes.	The candidate will be asked up to three questions relating to Performance 1, Performance 2 and/or Performance 3. Through their answers, the candidate can describe, explain, and analyse dance processes such as improvisation, choreography and/or rehearsal; experiential anatomy; safe and healthy dance as well as the artistic choices made in regard to their examination performances.

The current study entailed recording examinations and marking with the DAapp. The only difference for students was the presence of a technician to record their performances on an iPad, so all aspects of their school-based examination proceeded as usual. Anecdotally, it appeared that recording students' exams for school-based assessments was normal practice for some practitioners but not for others. To ensure examination materials were fair, valid, explicit, educative, and comprehensive, all the tasks and marking keys were constructed by the participating teachers and markers. The head of the dance department from the participating school (Lena) finalised all documents with participating teachers and markers (all experienced ATAR teachers and markers) before giving them to me. I did not have any input or mediation with the tasks or marking keys. Most however, were from those supplied by SCSA for schools to use. Thus, differences in opinion and beliefs around this process were not apparent (or at least, I was not made aware of any).

Table 3.6 shows the amended variables for the digital assessment format. The use of technology was intended to facilitate reflective reasoning, increase fairness and reliability in marking and assessment, and enable modern learners and practitioners to deliver an assessable, authentic digital representation of performances.

Table 3.6 Amended Variables from Original Examination Design Brief – DAapp Facilitation

Section	Technological Enhancement/Variable
Performance 1 Original Solo Composition in Genre of Choice	Record performance, mark and moderate live online using the application and iPads/laptops. Recordings instantaneously embedded into the application.

Section	Technological Enhancement/Variable
Performance 2 Set Solo	Record performance, mark and moderate live online using the application and iPads/laptops. Recordings instantaneously embedded into the application.
Performance 3 Structured Improvisation	Record performance, mark and moderate live online, using the application and iPads/laptops. Recordings instantaneously embedded into the application. Markers can select the improvisation tasks through the application.
Interview	Record performance, mark and moderate live online using the application and iPads/laptops. Recordings instantaneously embedded into the application. Markers can select the interview questions through the application.

All original components of the examination highlighted in Table 3.4 remained the same – Table 3.6 shows only the enhancements afforded by the DAapp. Aside from capturing performances, the DAapp also eliminated the use of pens and paper and alleviated much of the work for markers associated with writing and scoring, data entry and providing feedback to students. Importantly however, capturing the performances meant there was an enduring record of achievement in case of any discrepancies between marks, while ensuring that no parts of performances were missed by markers.

Validity and Reliability of Digitally Enhanced Performance for High-Stakes Assessment

There are different types of assessment validity; content validity, criterion validity and construct validity being the main ones (Raykov & Marcoulides, 2011). Valid criterion measures form part of the analytic marking rubrics in assessment and is vital for external tests and examinations (Kane, 2001; Messick, 1989). Content validity refers to how well the test measures elements of the construct (Cureton, 1951). By enhancing assessment with technology, reliability of the construct was still determinable. Any scores generated needed to be repeatable and comparable between contexts and measure the target outcomes. If there is a lack of adequate criterion within the assessment, or the content itself lacks validity, which serves as a pre-requisite to criterion validity, there is little value to the criterion validity (Cureton, 1951). Thus, an examination of the criterion measures in the context of the performance tasks are

made. Wider equity issues relating to fairness and more aptly bias in scoring and interpretations can be problematic when assessing (Messick, 1989). Subjectivity within the marking of arts courses compounds issues of authenticity.

Reliability is another important factor in digital assessment. Because I am dealing with intervention, I have to uncover whether or not the scores obtained in a live performance are consistent with scores obtained through digital representation and if not, what any likely causes of discrepancies may be. Statistical measures using the coefficient alpha are used to calculate reliability (Thompson, 2003). Other large scale research projects in the field of digital assessment have used measures of reliability to gain a measurable understanding of issues around reliability and validity through digital assessment (Nastiti, 2018; Newhouse, 2012a; Pagram & Williams, 2012). However, with a sample size of less than 30, statistical measures of reliability are not possible with my study. Nonetheless, discussions around reliability (does the alternate and digitally facilitated assessments produce consistent results compared to the original) and validity are still viable through the different data points within the mixed method design. With the affordance of technology and the recent advances in its accessibility and effectiveness for both learning and assessment, it only seems logical to explore the possibility of using technology to enhance the assessment of practical dance performance and see if digitally facilitating assessment is achievable, using the given framework and technical application.

Functions of the Dance Assessment Application

The method behind the use of the DAapp was to assist with exploring and identifying the issues surrounding implementing and enhancing the assessment of a practical dance exam with technology and the preparation for it, whilst trying to maintain reliability and validity of the assessment. The application was intended to be able to:

- Capture a usually ephemeral performance and record each live performance within the specified exam timeframe
- Record to both the device (iPad) and explore the possibility of cloud access (documentation)

- Enable markers to mark live during the performance and record their scores of each performance and save
- Mark the performance by touch screen using the analytic marking key and add any comments
- Playback instantaneously the performances recorded as part of the exam if any discrepancy between markers or performance omission occurs
- Moderate scores live with examining partners and save to both the device and possibly the cloud
- Select from a range of questions and tasks to be administered to the students
- Reduce the paper-based activities and busy work of teachers
- Prepare students with practice in class activities such as practice exam tasks/questions, reflection and self/peer feedback
- Use the recorded footage post examination for reflection, documentation and analysis purposes to inform future learning, teaching and assessment.
- Access the contents and use the app from anywhere, for reflection, feedback and marking i.e., at home, not just in class
- Enable the marking of exams by professional examiners to take place from anywhere
- Provide an alternate form of examination for part four, the interview, to explore reflection and critical engagement to alleviate the associated problems

The application was designed for examiners to record the performances themselves, enter and moderate the live marking. Due to limitations with the angle of the camera from the examiner's desk, it was decided that an additional person should operate the record function from the front right-hand side of the room. Ideally, the camera should have been positioned directly in front of the examiner to reproduce his or her exact perspective of the performance, however, due to the size of the room at this particular venue, there was insufficient space. Hence, the equipment was moved slightly to one side to obtain complete coverage of the 10m x 8m performance area. Two examination rooms were utilised on the day of the examinations, so there were two examiners and one technician in each room who operated the iPad or laptop and the application respectively.

The above arrangement meant there was an additional person in the examination room (the technician operating the iPad), a potential distraction for the performers. However, candidates taking the actual final WACE/ATAR dance examination can opt to have a technical support person in the examination room during Performance 1 to operate the sound equipment. Therefore, provided correct procedures were followed, the extra person in the room was not deemed to be a problem and the usual exam conditions and protocols were followed in both examination rooms so that the assessments were as fair and equitable as possible for all candidates. This setup was in line with the ATAR dance examinations, where up to three examination rooms are utilised at the same time; each attended by two examiners, one technician and the candidate. Figure 3.1 below depicts the examination room layout for ATAR dance examinations (SCSA, (2016c, p. 14), where candidates are required to work within the marked performance area shown.

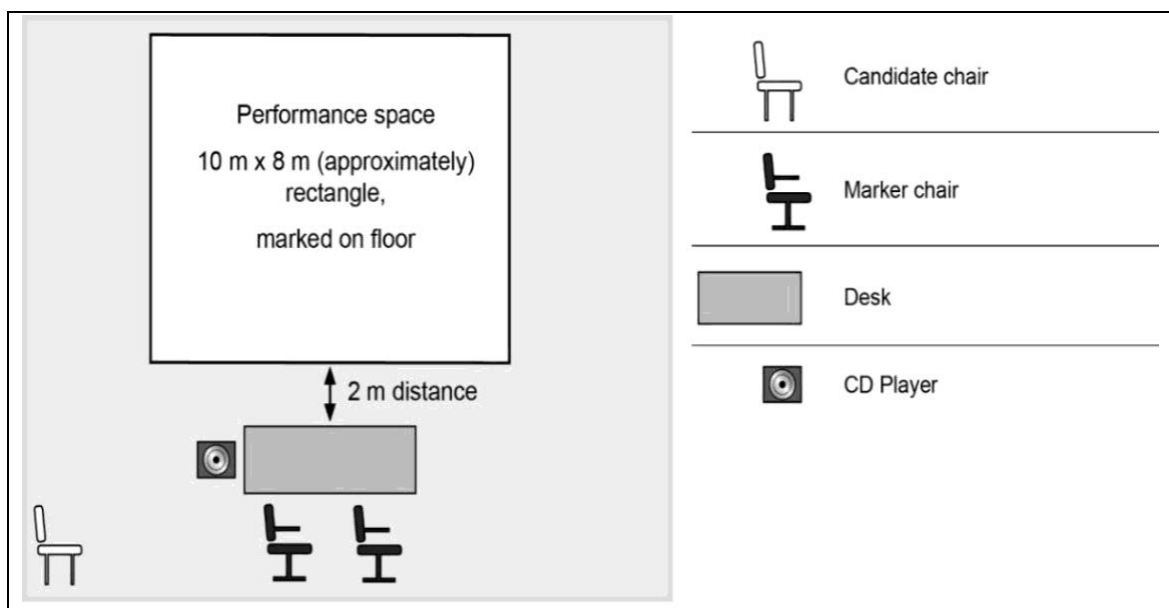


Figure 3.1 Examination Room Layout

The figure below shows the same layout used for the ATAR dance examinations (2016), with additional resources in the examination room to accommodate the DAapp for the purpose of the study.

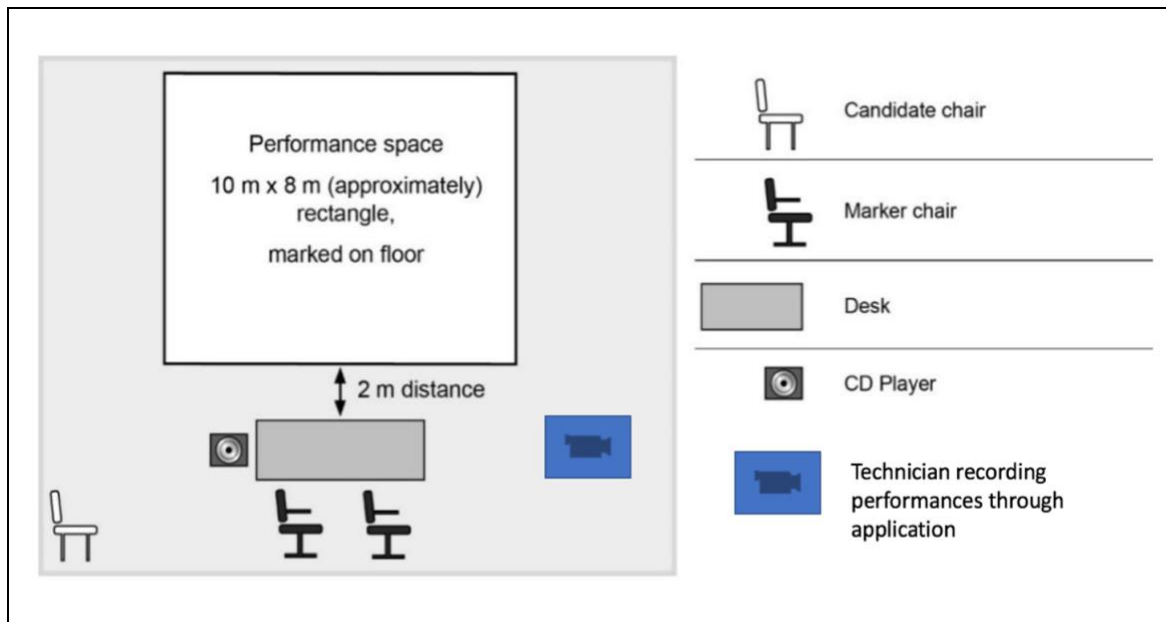


Figure 3.2 Examination Room Layout with Additional Resources

The performance space shown above is replicated in Figures 3.11 – 3.14 to illustrate the functionality of the application and maintain the privacy and anonymity of participants.

Functionality and Interface of the Dance Assessment Application (DAapp)

Depending on their logins, markers, teachers, technicians, and students had access to different screens and were directed to different appropriate locations for their specific tasks and roles.

Role of The Technician

The figure below shows the first screen encountered by technicians when recording examinations on the iPad. Examiners and teachers also had access to this page and the various functions displayed.

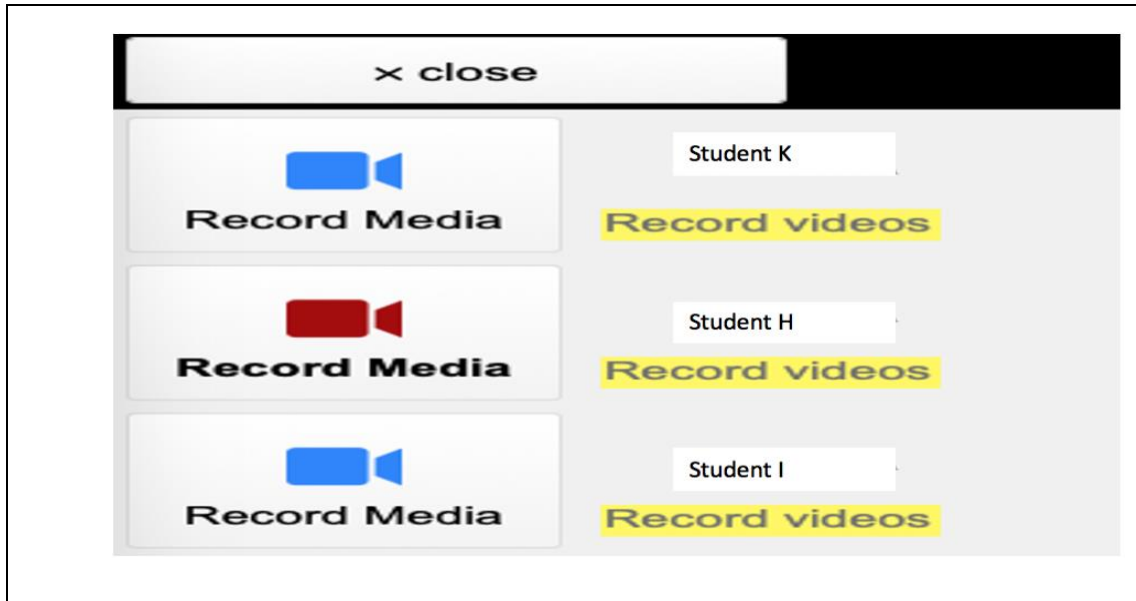


Figure 3.3 Technician Selecting Student to Record Dance Examination

After selecting the relevant student, technicians were directed to the screen below for recording each performance by clicking on the Record Media button. Each performance was instantly saved and embedded in the application.

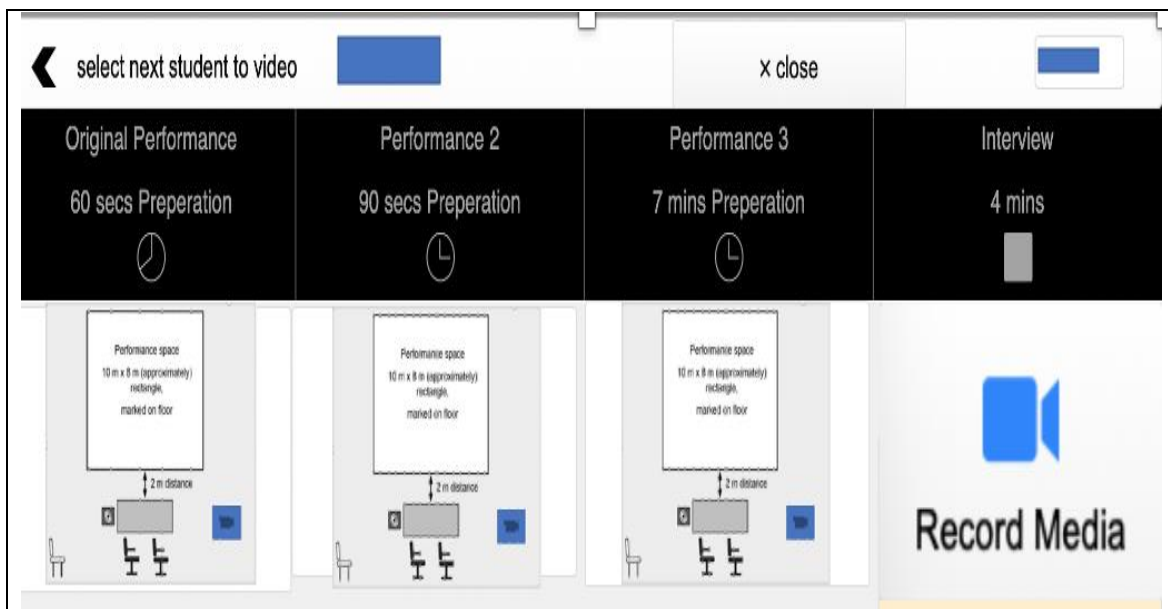


Figure 3.4 Technicians Select a Performance to Record

Live Marking

The markers attended a demonstration on how to use the DAapp on the morning of the examination day, to gain a common understanding of the functionality and

interface of the application. They were already familiar with the marking keys, and the teachers in charge of the course had put a marking protocol in place with the markers who were selected from the usual pool. More time was considered for the training of the teachers and markers with the new technology, however, due to limited time and resources, this was not an option.

The school-based exam was conducted in the usual manner; candidates entered the room and proceeded with the exam in the normal format. Using the application, the examiners entered the marks on their laptops or iPads. This helped to maintain reliability and validity, because the process closely mirrored the original format of the ATAR dance examination. Each marker was allocated unique login credentials, which were deidentified and coded for privacy and confidentiality.

Markers were able to select the relevant student, tasks and interview questions in the application, replacing the paper-based process. The marking keys were embedded in the application and displayed on a colour-coded touch-screen interface that automatically tallied the scores. The iPad, used to video the performances and operated by a technician, was also linked to the application so that examiners could watch and play back the performances at any time. This could also be used for moderation, checking marks, and reviewing performances where needed. In this way, an enduring record of performance and achievement was maintained to inform pedagogy and provide feedback to students.

Examiners could type additional comments, relating to the performance or functionality of the application, into a comment box, from which refinements could be made for the following round of data collection. In addition, they were provided with all the necessary paperwork to mark the examination in case they were unable to use the technology for any reason. This complied with the standard procedures of the ATAR dance exams where examiners are provided with hard copies for marking.

After logging in, examiners were taken through a series of windows that digitally facilitated each section of the examination. Locations, names, and faces were removed to protect participants' anonymity. Figure 3.5 shows the student selection page to commence marking.

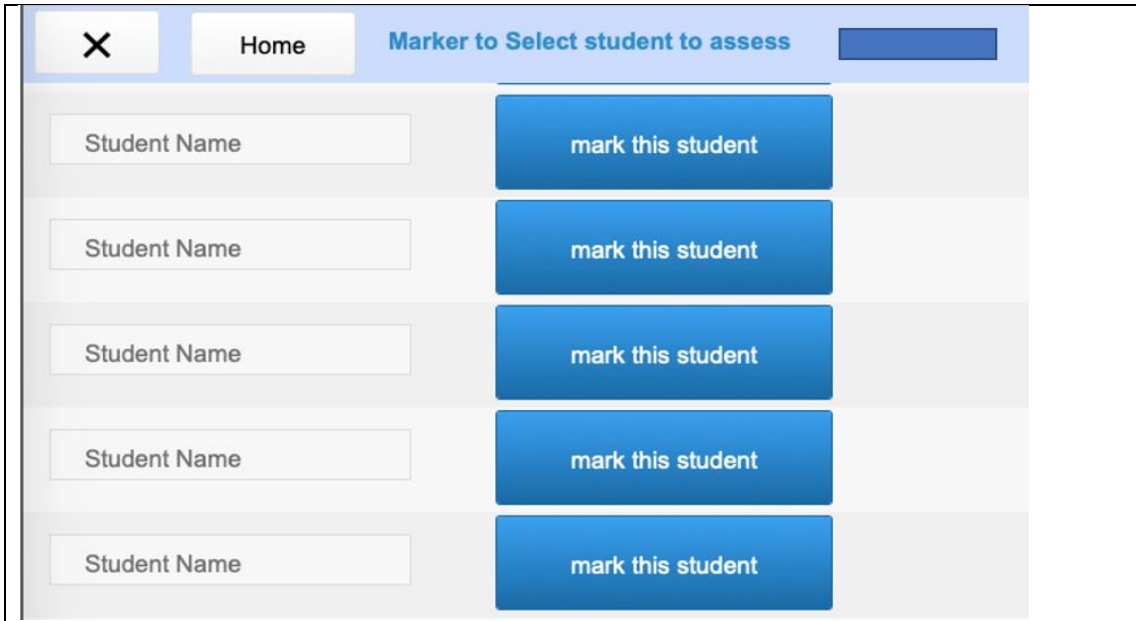


Figure 3.5 Live Markers Select a Student for Marking

After selecting the student, examiners could choose the relevant tasks and interview questions from a dropdown menu. They were able to pre-set the tasks and questions prior to the examination or during the live examination at the commencement of each section (see Figures 3.6 to 3.9 below).

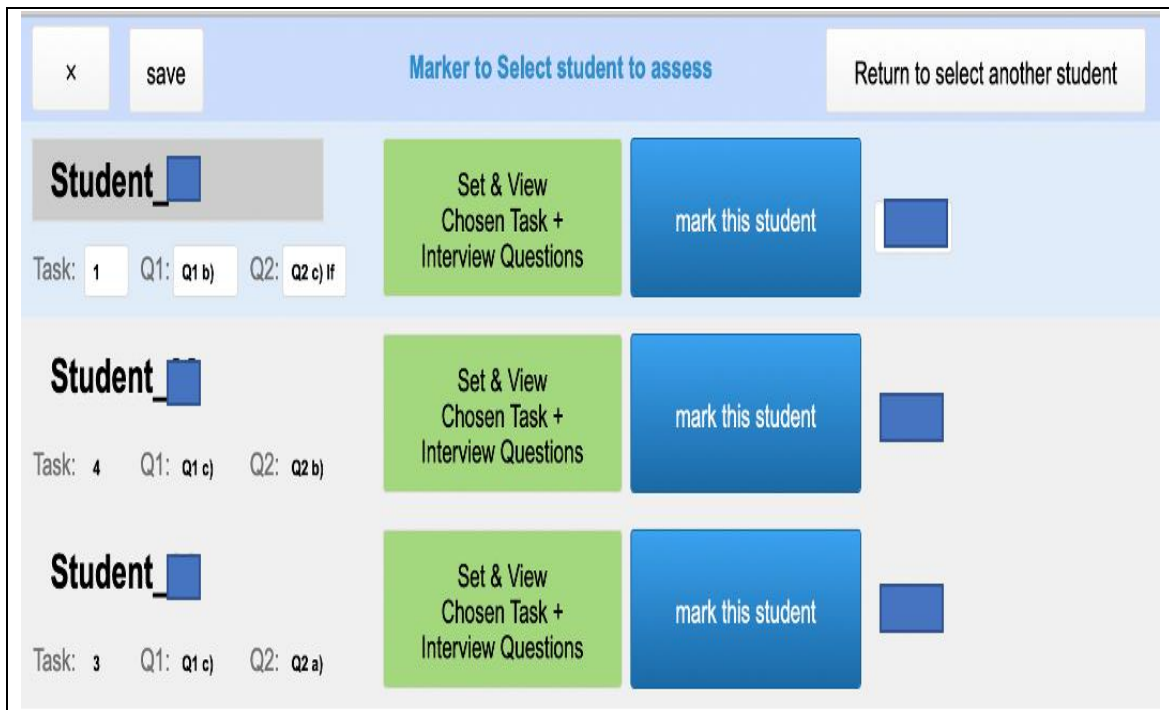


Figure 3.6 Live Markers Select Set tasks for Performance 3 and Interview Questions

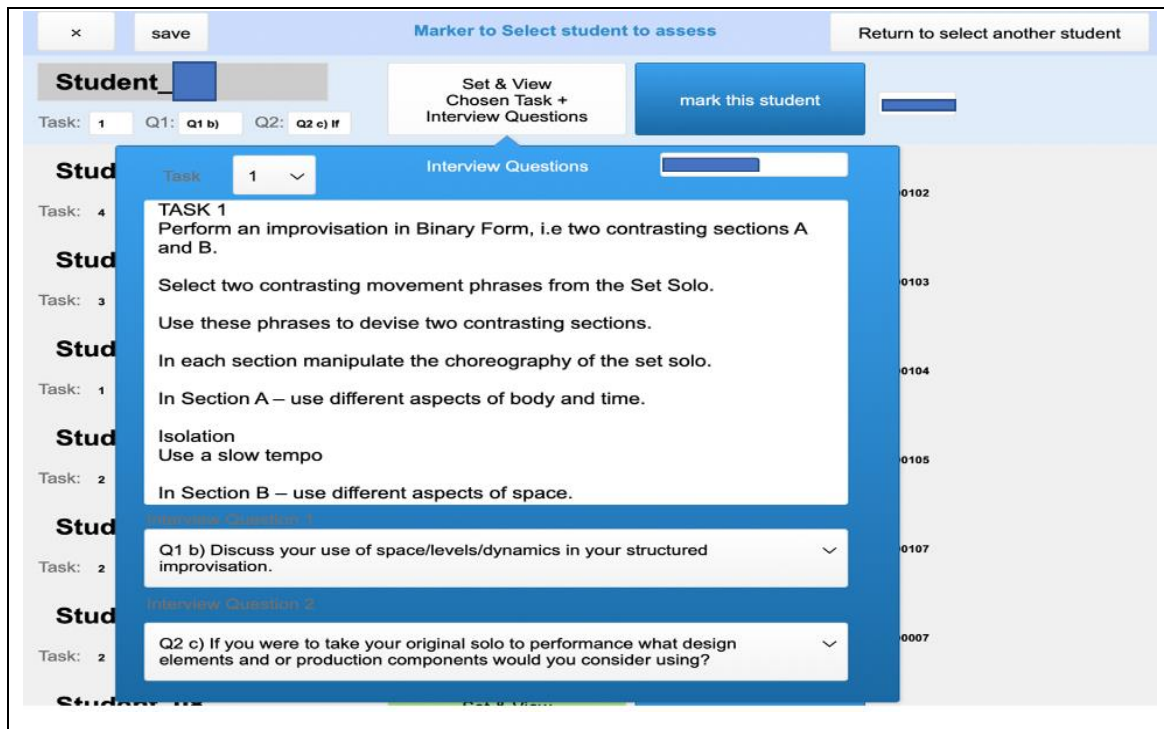


Figure 3.7 Drop-Down Menu for Tasks and Interview Questions

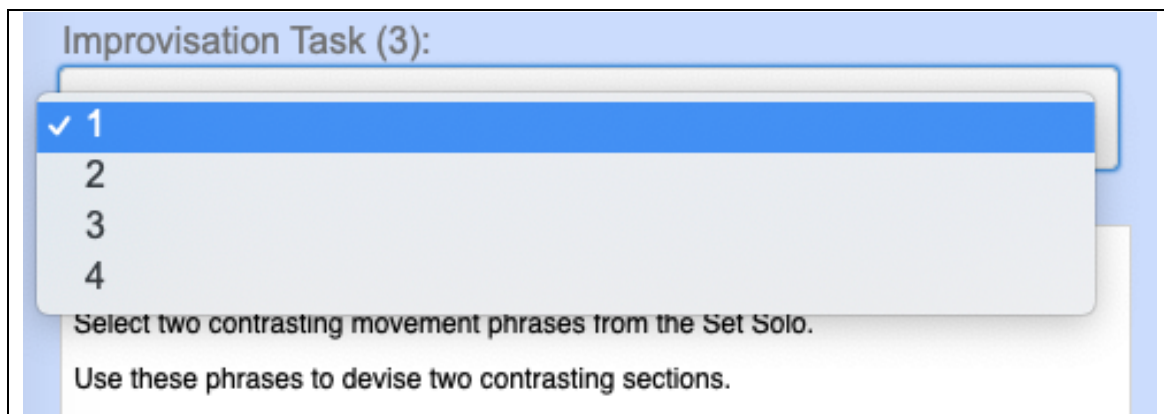


Figure 3.8 Selection of Improvisation Task for Student

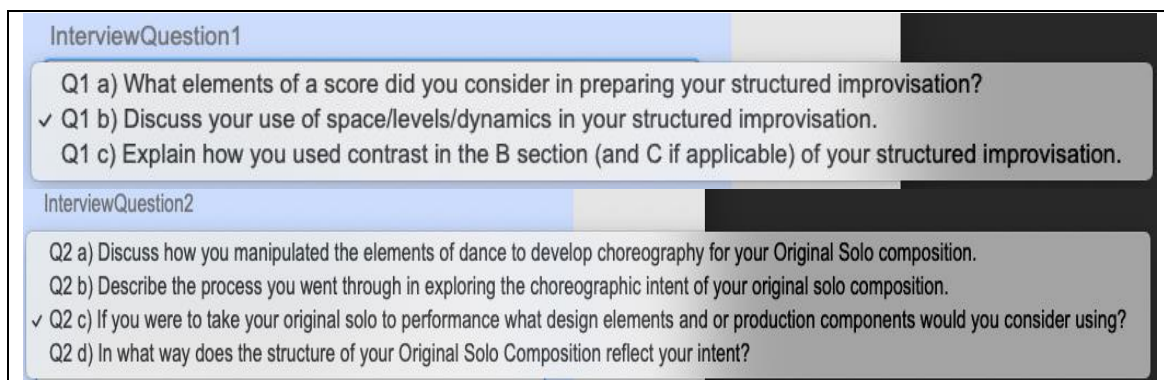


Figure 3.9 Ticks Indicate the Selected Questions

Examiners could toggle between the home screen, the marking key, videos of performances, tasks, and interview questions at any time. Figure 3.10 shows an overview of the tasks and questions selected for a student, that could be read out loud to students during the examination.

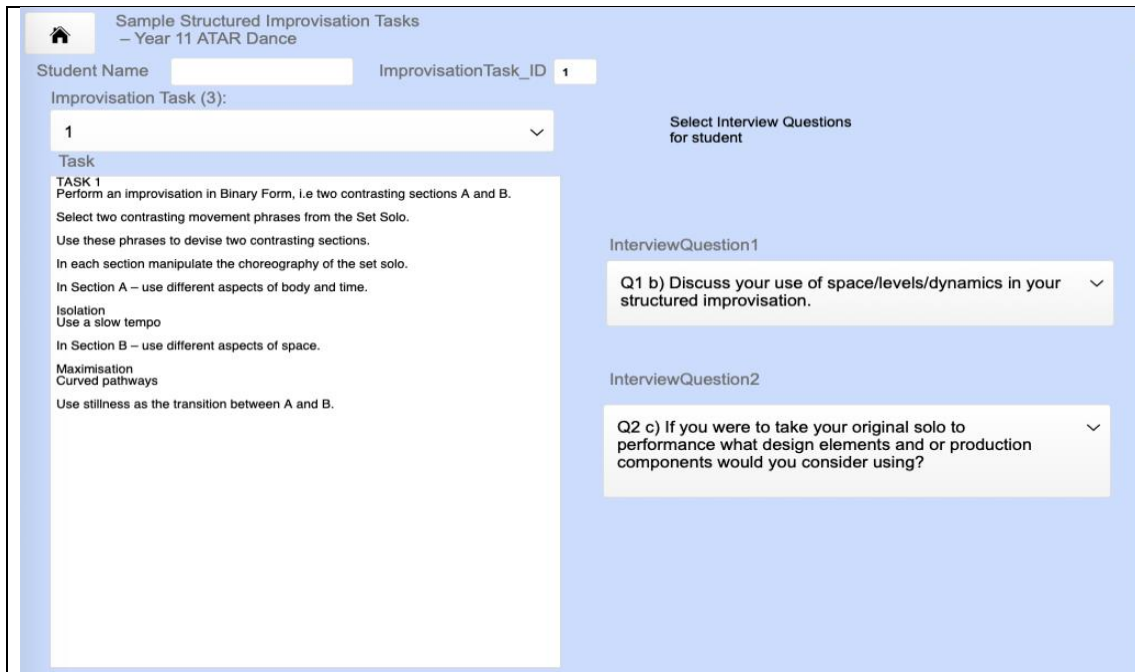


Figure 3.10 Overview of Tasks and Questions

All the digitally facilitated tasks shown in Figures 3.7 to 3.10 were also completed manually with paper and pen using the traditional marking method. The images that follow are screenshots of the marking that took place on the application during the live examinations. The marking keys were based on the School Curriculum and Standards Authority (2016) and modified by the participating school prior to being embedded in the application. Figure 3.11 shows the touchscreen interface of the analytic marking key, with the assigned marks and a statement of choreographic intent for Performance 1, the original solo composition. The comments box is populated with comments made by the examiner for the original solo composition. The performance was recorded on the iPad by a technician and instantly saved to the application for review by examiners. Examiners usually finalised their marks for Performances 1 and 2 during the seven-minute preparation time before the start of Performance 3, the structured improvisation. Since there was zero tolerance for each criterion, markers had to

moderate to the same score, so the time was used to discuss and finalise the scores for an exact match between examiners against the criteria on the marking key.

P1 mark 11 + P2 mark 17 + P3 mark 5 + P4 mark 5 = Total mark 38

Performance 1 | Performance 2 | Performance 3 | Interview | 01

Performance 1: Original solo composition - marked out of 13 marks and converted to 35%
mark 11/13

Criterion 1: Choreographic intent mark 2/2

Solo has not shown any relevance to the stated choreographic intent.	Solo or (part thereof) displays intermittent connection to the stated choreographic intent.	Solo or (part thereof) displays a clear connection to the stated choreographic intent.
----------------------------------------------------------------------	---------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------

Criterion 2: Organising the dance structure mark 4/5
(sequencing, transition, repetition, variation and contrast, unity – manipulation of the elements of dance (BEST) as they relate to dance composition)

Solo is ineffective. Inadequate use of BEST.	There is a basic structure to the solo with ineffective use of BEST.	Sequencing of movement is simple and predictable. Movement choices are mostly from a known source. Demonstrates limited and/or ineffective manipulation of the elements of dance (use of BEST).	Sequencing of movement is simple and predictable. Movement choices are from a known source. Demonstrates adequate and/or predictable manipulation of the elements of dance (use of BEST).	Solo demonstrates unity of structure. Sequencing of movement and use of space may sometimes be predictable. Demonstrates competent manipulation of the elements of dance (use of BEST).	Solo demonstrates structure through sequencing of movement. Uses a skilled solo manipulation of the elements of dance (BEST) throughout the solo.
----------------------------------------------	----------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------

Criterion 3: Presentation mark 3/4 (confidence, engagement, projection, focus, commitment)

No attempt at presentation.	Performance presented lacks confidence. Limited commitment and focus throughout solo.	Some of the performance presented lacks confidence, focus and commitment to the movement.	Performance presented is mostly confident. Commitment to the movement and focus are sometimes inconsistent.	Performance presented confident, committed and focused. Performance engages the viewer.
-----------------------------	---------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------

Criterion 5: Safe dance practices and alignment mark 2/2

Solo performed without regard to safe dance practices. Limited or no alignment principles demonstrated.	Mostly applies safe dance practices. Demonstrates some use of alignment principles.	Consistently applies safe dance practices. Generally demonstrates good use of alignment principles.
---------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------

Comment

Electronics- a very clear solo with strong and clear investigation into new movement patterns and pathways. Good work
Keep refining your moving and perhaps working on performance skills

My Original solo composition, follows the ordered movement of electronics, in response to the music as a stimuli. The choreography of my solo including the spatial pathways, shows a contrast between linear and angular versus circular and curved elements. This is to portray a contrast between the physical appearance of our devices and the configurations and circuits within them.

Performance space
10 m x 8 m (approximately)
rectangle,
marked on floor

↕ 2 m distance

Play Video
Play Enlarge Video

Figure 3.11 Live Marking of Performance 1

Figure 3.12 shows the touchscreen interface of the analytic marking key with the assigned marks and a comments box for Performance 2, the set solo.

← × → : P1 mark 11 + P2 mark 17 + P3 mark 5 + P4 mark 5 = Total mark 38

Performance 1 Performance 2 Performance 3 Interview

Performance 2 : Set solo in the contemporary genre - marked out of 25 marks and converted to 35%
mark 17/25

Criterion 1: Execution of technical dance skills mark 3/6 Criterion 1: Execution of technical dance skills

Does not demonstrate the technical skills in the set solo.	Executes minimal technical dance skills in the set solo with inadequate control.	Executes some of the technical dance skills in the set solo with many inconsistencies in control.	Executes some of the technical dance skills in the set solo with minor inconsistencies in control.	Executes most of the technical dance skills in the set solo with minor inconsistencies in control.	Executes the range of technical dance skills in the set solo with minor inconsistencies in control.	Executes the range of technical dance skills in the set solo with consistent control.
------------------------------------------------------------	----------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------

Criterion 2: Body alignment mark 3/5 Criterion 2: Body alignment

Displays no body alignment throughout the set solo.	Displays inadequate control of body alignment relating to the choreography of the set solo.	Displays many inconsistencies in control of body alignment relating to the choreography of the set solo.	Displays some inconsistencies in control of body alignment relating to the choreography of the set solo.	Displays control of body alignment appropriate to the choreography of the set solo.	Consistently maintains a high level of control of body alignment appropriate to the choreography of the set solo.
-----------------------------------------------------	---------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------

Criterion 3: Interpretation of choreographic intent mark 3/4 Criterion 3: Interpretation of choreographic intent

Performs the set solo with no connection to the choreographic intent.	Performs the set solo with limited connection to the choreographic intent.	Performs the set solo with intermittent connection to the choreographic intent.	Performs a sound interpretation of the set solo and maintains a clear connection to the	Performs an artistic interpretation of the set solo, capturing the nuances of the choreography.
-----------------------------------------------------------------------	----------------------------------------------------------------------------	---------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------

Criterion 4: Musicality mark 2/3 Criterion 4: Musicality

Displays inadequate rhythmic accuracy and lack of musicality throughout the set solo.	Displays minimal rhythmic accuracy, limited musicality and incorrect timing of movements within the set solo.	Displays some rhythmic accuracy and/or embodies most of the choreography through the contrasts in the music. Shows minor inconsistencies with timing of specific movements within the set	Displays a strong sense of rhythmic accuracy and clearly and consistently embodies the choreography through the contrasts in the music. Sustains accurate timing of specific movements within the set solo.
---------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Criterion 5: Presentation mark 3/4 Criterion 5: Presentation

No attempt at presentation.	Overall performance lacks confidence. Limited commitment and focus throughout set solo. Movements are largely marked rather than fully performed.	Presentation skills in some sections of the set solo are inconsistent. Some sections of the performance lack confidence, commitment and focus.	Presentation skills are mostly sustained throughout the set solo. Performance is mostly confident, committed and focused.	Presentation skills are sustained throughout the set solo. Performance is confident, committed and focused.
-----------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------

Criterion 6: Performance accuracy mark 3/3 Criterion 6: Performance accuracy

Does not complete the choreography of the set solo.	Performs the choreography of the set solo with significant errors.	Performs the choreography of the set solo with minor errors.	Performs the choreography of the set solo with no errors.
-----------------------------------------------------	--------------------------------------------------------------------	--------------------------------------------------------------	------------------------------------------------------------------

Comment

A good start.
Relax your face and try not to lick your lips.
Continue to strengthen your core and the stabilizing muscles of your feet and knees.
Don't cut movrmts short as you get tired or as the dance progresses

Performance space
10 m x 8 m (approximately) rectangle,
marked on floor

2 m distance

Play Video Play Enlarge Video

Figure 3.12 Live Marking of Performance 2

Figure 3.13 depicts a screenshot of the marking application for Performance 3, the structured improvisation. Alongside the performance video is the structured improvisation task assigned to the student. The comments box for examiners' feedback is situated right below the marking key, so that all functions are accessible on one page.

P1 mark 11 + P2 mark 17 + P3 mark 5 + P4 mark 5 = Total mark 38

Performance 1 Performance 2 Performance 3 Interview

Performance 3 : Structured improvisation- marked out of 10 marks and converted to 20%
mark 5/10

Criterion 1: Ideas and movement choices in responding to task mark 3/6 Criterion 1: Ideas and movement choices in responding to task

Makes no attempt to respond to the task and/or does not meet the minimum time requirements.	(1) A limited and or partial attempt at completing the task. A limited use of choreographic tools and structure. Rearranges known movement without expanding movement potential.	(2) A limited and or partial attempt at completing the task. A limited use of choreographic tools and structure. Rearranges known movement without expanding movement potential.	(3) Adequately completes the task. A competent use of choreographic tools and logical structure. Rearranges known movement relevant to the set task. Movement choices reflect an understanding of the concept of the task.	(4) Adequately completes the task. A competent use of choreographic tools and logical structure. Rearranges known movement relevant to the set task. Movement choices reflect an understanding of the concept of the task.	(5) Successfully completes the task. A clear trajectory (structure), decision-making process and development of ideas relating to concept from start to end. Uses choreographic devices and contributes a personal and imaginative exploration of movement and response.	(6) Successfully completes the task. A clear trajectory (structure), decision-making process and development of ideas relating to concept from start to end. Uses choreographic devices and contributes a personal and imaginative exploration of movement and response.
---------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Criterion 2: Confidence, commitment and creativity in performance mark 2/4 Criterion 2: Confidence, commitment and creativity in performance

Makes an inadequate attempt at the task.	Presents a performance that lacks confidence.	Presents a mostly confident performance.	Presents a confident and committed performance.	Presents an engaging performance with confidence and commitment.
------------------------------------------	-----------------------------------------------	-------------------------------------------------	-------------------------------------------------	------------------------------------------------------------------

Comment

A) minimization Angular shapes
Stillness
B) accumulation and retrograde

TASK 3

Perform an improvisation in Binary Form, i.e two contrasting sections A and B.

Select two contrasting movement phrases from the Set Solo. Use these phrases to devise two contrasting sections.

In each section manipulate the choreography of the set solo.

In Section A – use different aspects of space and body.

Minimisation
Angular shapes

In Section B – explore a contrasting floor plan and use the following choreographic devices:

Accumulation
Retrograde

Use stillness as the transition between A and B.

Performance space
10 m x 8 m (approximately)
rectangle,
marked on floor

↑ 2 m distance ↓

Play Video Play Enlarge Video

Figure 3.13 Live Marking of Performance 3

Part 4 of the examination was the interview. The below image in figure 3.14 shows where the capture of the recorded interview would be seen (room layout), against the marking key, questions and comments box.

P1 mark 11 + P2 mark 17 + P3 mark 5 + P4 mark 5 = Total mark 38 [marker ID: 01]

Performance 1 Performance 2 Performance 3 Interview

Interview marked out of 10 marks and converted to 10%
mark 5/10

Criterion 1: Response mark 3/6 Criterion 1: Response

Shows limited awareness of own dance and/or processes.	(1) Briefly and/or generally describes own dance processes relevant to the questions.	(2) Briefly and/or generally describes own dance processes relevant to the questions.	(3) Describes, with some analysis, characteristics and qualities of own dance and processes relevant to the questions.	(4) Describes, with some analysis, characteristics and qualities of own dance and processes relevant to the questions.	(5) Critically, and with some insight, analyses characteristics and personal qualities of own dance and processes relevant to the questions.	(6) Critically, and with some insight, analyses characteristics and personal qualities of own dance and processes relevant to the questions.
--------------------------------------------------------	---------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------

Criterion 2: Dance terminology and language mark 2/4 Criterion 2: Dance terminology and language

No use of dance terminology and language in response.	Limited use of dance appropriate terminology and language in responses.	Uses some appropriate dance terminology and language in responses.	Uses a range of appropriate dance terminology and language in responses.	Effectively uses a range of appropriate dance terminology and language in responses.
-------------------------------------------------------	-------------------------------------------------------------------------	---------------------------------------------------------------------------	--------------------------------------------------------------------------	--------------------------------------------------------------------------------------

Comment

Body- moment motif well discussed. Angular and curved good.
Energy- could of touched on this as it's a big part of your quality of moment or dynamics/energy
Space- linear special patters.
Time

Q1 b) Discuss your use of space/levels/dynamics in your structured improvisation.

Q2 a) Discuss how you manipulated the elements of dance to develop choreography for your Original Solo composition.

Performance space
10 m x 8 m (approximately) rectangle,
marked on floor

2 m distance

Play Enlarge Video

Figure 3.14 Live Marking of Interview

After all the live examinations were completed, teachers could see their marks alongside the marking criteria and provide this information to their students. A Pdf

report generated from the application, served as a record of student achievement – see Figure 3.15.

Student I

Unit Code: AEDAN

Dance ATAR course Practical (performance) marking key 2016

	%	marks
P1	32	12
P2	28	20
P3	12	6
Interview	5	5
Student total mark	77.3	43

35% - 13 marks
35% - 25 marks
20% - 10 marks
10% - 10 marks
/ 53

Dance ATAR course Practical (performance) examination 100% (66 marks)

Performance 1: Original solo composition 35% (20 marks)

Description	Marks
Criterion 1: Choreographic intent	
Solo or (part thereof) displays intermittent connection to the stated choreographic intent.	2
Solo or (part thereof) displays a clear connection to the stated choreographic intent.	1
Solo has not shown any relevance to the stated choreographic intent.	0
Sub-total	2 / 3
Criterion 2: Organising the dance structure (sequencing, transition, repetition, variation and contrast, unity – manipulation of the elements of dance (BEST) as they relate to dance composition)	
Solo demonstrates unity of structure through skilled sequencing of movement. Uses a skilled selection and manipulation of the elements of dance (use of BEST) throughout most of the solo.	5
Solo demonstrates unity of structure. Sequencing of movement and use of space may sometimes be predictable. Demonstrates competent manipulation of the elements of dance (use of BEST).	4
Sequencing of movement is simple and predictable. Movement choices are from a known source. Demonstrates adequate and/or predictable manipulation of the elements of dance (use of BEST).	3
Sequencing of movement is simple and predictable. Movement choices are mostly from a known source. Demonstrates limited and/or ineffective manipulation of the elements of dance (use of BEST).	2
There is a basic structure to the solo with ineffective use of BEST.	1
Solo is ineffective. Inadequate use of BEST.	0
Sub-total	4 / 5
Criterion 3: Presentation (confidence, engagement, projection, focus, commitment)	
Performance presented is confident, committed and focused. Performance mostly engages the viewer.	4
Performance presented is mostly confident. Commitment to the movement and focus are sometimes inconsistent.	3
Some of the performance presented lacks confidence, focus and commitment to the movement.	2
Performance presented lacks confidence. Limited commitment and focus throughout solo.	1
No attempt at presentation.	0
Sub-total	4 / 4
Criterion 5: Safe dance practices and alignment	
Consistently applies safe dance practices. Generally demonstrates good use of alignment principles.	2
Mostly applies safe dance practices. Demonstrates some use of alignment principles.	1
Solo performed without regard to safe dance practices. Limited or no alignment principles demonstrated.	0
Sub-total	2 / 2
Performance 1 total:	32 / 35% 12 / 13

Dance ATAR course Practical (performance) marking key 2016

Performance 1 Comments:
 Clear intent well written
 Nice choices in movement just make isolation bigger
 Good focus
 Can use initiation clearly
 More social definition could occur as well

Performance 2 Comments:
 More use of weighted movement
 Nice transitions
 Could see some personal connection at times
 Bit too far over on start of curves
 Connect with music a bit more
 Find extremes of movement end points some lovely moments

Performance 3 Comments:
 Ternary
 Set solo
 Contrast
 A body space low levels more low level movement
 B energy pervasive
 A contrast level

Needed more order and detail to meet task requirements think you reversed task.

Interview Comments:
 1b describes stimulus and improvisation and movement development describe what you did in movement
 2b describes task and choices but needed more detail in choices and language

Performance 2: set solo in the contemporary genre 35% (25 marks)

Description	Marks
Criterion 1: Execution of technical dance skills (fluency of the body, coordination, quality of line, breadth of movement, transfer of weight, use of gravity, capacity to move in and out of the floor, contrasts in speed, force and weighted limbs)	
Executes the range of technical dance skills in the set solo with consistent control.	6
Executes the range of technical dance skills in the set solo with minor inconsistencies in control.	5
Executes most of the technical dance skills in the set solo with minor inconsistencies in control.	4
Executes some of the technical dance skills in the set solo with minor inconsistencies in control.	3
Executes some of the technical dance skills in the set solo with many inconsistencies in control.	2
Executes minimal technical dance skills in the set solo with inadequate control.	1
Does not demonstrate the technical skills in the set solo.	0
Sub-total	4 / 6
Criterion 2: Body alignment (posture, pelvis placement, knee alignment in falling to the floor, parallels, maintaining alignment through balance and off-balance actions)	
Consistently maintains a high level of control of body alignment appropriate to the choreography of the set solo.	5
Displays control of body alignment appropriate to the choreography of the set solo.	4
Displays some inconsistencies in control of body alignment relating to the choreography of the set solo.	3
Displays many inconsistencies in control of body alignment relating to the choreography of the set solo.	2
Displays inadequate control of body alignment relating to the choreography of the set solo.	1
Displays no body alignment throughout the set solo.	0
Sub-total	4 / 5
Criterion 3: Interpretation of choreographic intent (spatial clarity, movement style, nuance, contrast within the distinct worlds of the solo)	
Performs an artistic interpretation of the set solo, capturing the nuances of the choreography.	4
Performs a sound interpretation of the set solo and maintains a clear connection to the choreographic intent.	3
Performs the set solo with intermittent connection to the choreographic intent.	2
Performs the set solo with limited connection to the choreographic intent.	1
Performs the set solo with no connection to the choreographic intent.	0
Sub-total	3 / 4
Criterion 4: Musicality (rhythmic accuracy, embodiment of choreography)	
Displays a strong sense of rhythmic accuracy and clearly and consistently embodies the choreography through the contrasts in the music. Sustains accurate timing of specific movements within the set solo.	3
Displays some rhythmic accuracy and/or embodies most of the choreography through the contrasts in the music. Shows minor inconsistencies with timing of specific movements within the set solo.	2
Displays minimal rhythmic accuracy, limited musicality and incorrect timing of movements within the set solo.	1
Displays inadequate rhythmic accuracy and lack of musicality throughout the set solo.	0
Sub-total	3 / 3
Criterion 5: Presentation (confidence, engagement, projection, focus, commitment)	
Presentation skills are sustained throughout the set solo. Performance is confident, committed and focused.	4
Presentation skills are mostly sustained throughout the set solo. Performance is mostly confident, committed and focused.	3
Presentation skills in some sections of the set solo are inconsistent. Some sections of the performance lack confidence, commitment and focus.	2
Overall performance lacks confidence. Limited commitment and focus throughout set solo. Movements are largely marked rather than fully performed.	1
No attempt at presentation.	0
Sub-total	3 / 4
(significant omission/changes in choreography)	
Sub-total	3 / 4

Dance ATAR course Practical (performance) marking key 2016

Performance 2: set solo in the contemporary genre 35% (25 marks)

Figure 3.15 Pdf of Examination Results

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Digital Marking

Examiners were able to mark the recorded performances in the application from any location at any time, provided they had internet connection and access to a laptop or iPad. They commenced the process by selecting a student and his or her associated footage, and recorded their marks using a touchscreen marking key. In this way, the markers progressed through each element of the examination, from Performance 1 to Performance 4. All scores were automatically saved and could be amended until final submission.

The scores from both modes of assessment (i.e. using the application for both live and pre-recorded markings) were used to determine the reliability of the technology. Similarities and differences in scores between examiners, their partners and contexts were analysed and interpreted. This information was triangulated with other collected data to determine the strengths and limitations of digitising practical dance assessments.

For the digital examiners, a recording of each candidate's performance and other relevant information were visible in the images presented in Figures 3.11, 3.12 and 3.13 for Performances 1, 2 and 3 respectively. The touchscreen was interactive, so examiners could mark and view the footage simultaneously and review parts or all of the performance if necessary. There was also an option to play the video at full-screen size. Examiners could post comments in the comments box for students and colleagues to read, analyse and reflect upon. The application offered both digital and live examiners the same capabilities; the only difference being that the digital examiners did not watch the performances live.

Examiners viewed the recorded interview (Part 4 of the examination) and awarded a mark for students' responses. The digital examiners also had an opportunity to read the students' responses to their alternate task, i.e., using the DAapp in a practical dance examination (see Figure 3.16). However, it was decided not to mark the alternate task responses for technical reasons and because the majority of alternate task responses had not been saved (to be discussed in further detail in the results chapter).

P1 mark 8 + P2 mark 13 + P3 mark 4 + P4 mark 5 = Total mark 30

Performance 1 Performance 2 Performance 3 Interview

Interview marked out of 10 marks and converted to 10%
mark 5/10

Criterion 1: Response		mark 3/6 Criterion 1: Response				
Shows limited awareness of own dance and/or processes.	(1) Briefly and/or generally describes own dance processes relevant to the questions.	(2) Briefly and/or generally describes own dance processes relevant to the questions.	(3) Describes, with some analysis, characteristics and qualities of own dance and processes relevant to the questions.	(4) Describes, with some analysis, characteristics and qualities of own dance and processes relevant to the questions.	(5) Critically, and with some insight, analyses characteristics and personal qualities of own dance and processes relevant to the questions.	(6) Critically, and with some insight, analyses characteristics and personal qualities of own dance and processes relevant to the questions.

Criterion 2: Dance terminology and language		mark 2/4 Criterion 2: Dance terminology and language		
No use of dance terminology and language in response.	Limited use of dance appropriate terminology and language in responses.	Uses some appropriate dance terminology and language in responses.	Uses a range of appropriate dance terminology and language in responses.	Effectively uses a range of appropriate dance terminology and language in responses.

Comment

Q1 a) What elements of a score did you consider in preparing your structured improvisation?

The use of isolation in the first section and curved pathways in the second section were the most considered aspects of preparing my improvisation. Isolation automatically requires me to perform at a slower tempo to be able to distinctly move individual parts of my body, so therefore my ideal focus was on isolation of my limbs. When performing curved pathways, I find that I automatically perform larger movements to be able to cover and use up the entire space in a circular motion, so therefore I spent more time focusing on pathways to initiate maximised movement.

Q2 d) In what way does the structure of your Original Solo Composition reflect your intent?

My OSC is of a linear structure. This structure always a continual flow between the two particular energies of my choreography. This includes a very uncontrollable, spiralling dynamic compared to a staccato, upright and elevated energy. This reflects the idea of wanting more and the constant need to possess new items and then the satisfaction of obtaining these items and how the two different feelings are a constant spiral around each other.

Performance space
10 m x 8 m (approximately)
rectangle,
marked on floor

↑ 2 m distance

Play Enlarge Video

Figure 3.16 Digital Marking of Interview

Modification of Interview

An alternate interview was administered to students after the live and usual dance performance examinations had taken place to see if further critical engagement could be obtained through digital facilitation.

Usually, in the normal format of the assessment students are first asked to explain their creative choices, or how they solved the task given to them in their structured improvisation (Performance 3 of the exam). Students usually do this without being reminded of what the original task was or being able to watch back their performance. The modification to the interview using the technology was designed to allow students an engaged and more considered response to their own performance, before answering questions based on their exam performance. It was also implemented to see if students could answer the questions better, without the usual stressful situation of speaking in front of a panel of examiners and being somewhat physically and mentally exhausted from giving three live performances just moments before. Students were given the opportunity to watch back their third performance - the Structured Improvisation - before typing their response to the interview questions within the app. The task they were given for the structured improvisation was also placed next to their recorded video and questions, so that they could be reminded of the original task whilst responding to the question. They were given 10 minutes to complete this activity at the start of a 60-minute workshop using the technology in a formative setting. The teacher booked the class into the library for this activity, to use the library computers, rather than the iPads due to resource management and logistics within the school. Students accessed the content and saved their work on the web using the school server.

The implementation and method of use for the DAapp took place in the school library on the school computers accessed via the web, where the students participated in the activities. The students were given a demonstration supported through a video on how to use the DAapp to gain a common understanding of its functionality. The tasks and marking keys were already familiar to the students as they had already been using them in their usual classes with their classroom teacher. The students were assigned individual login credentials to be able to access only their own performances. Access to peer performances was only permitted if both students agreed to participate in the peer feedback activity.

The first step was to complete the alternate interview. Students logged in and had 20 minutes to watch their performance (the structured improvisation), with their

assigned task visible on the screen alongside their performance. After rereading the task, they proceeded to answer the interview questions, also visible on screen, by typing their responses into the box provided. In this way, the panel of examiners who usually asked students questions about their improvised performance was replaced by a more considered process, together with a visual reminder of their performance and a description of the task. Thus, the students and teacher had an opportunity to explore the DAapp and its potential for enhancing assessment. Students participated in a digitally facilitated interview with the DAapp that enabled higher-order thinking and reflective reasoning. By viewing their performances, they were able to enhance their understanding of assessment and recognise the value of reflective practice for their future learning and development. At the same time, they could see the examiner's feedback and comprehend how they had been marked by way of a transparent and holistic process. Figure 3.17 shows the screen that was visible to students after they logged in.

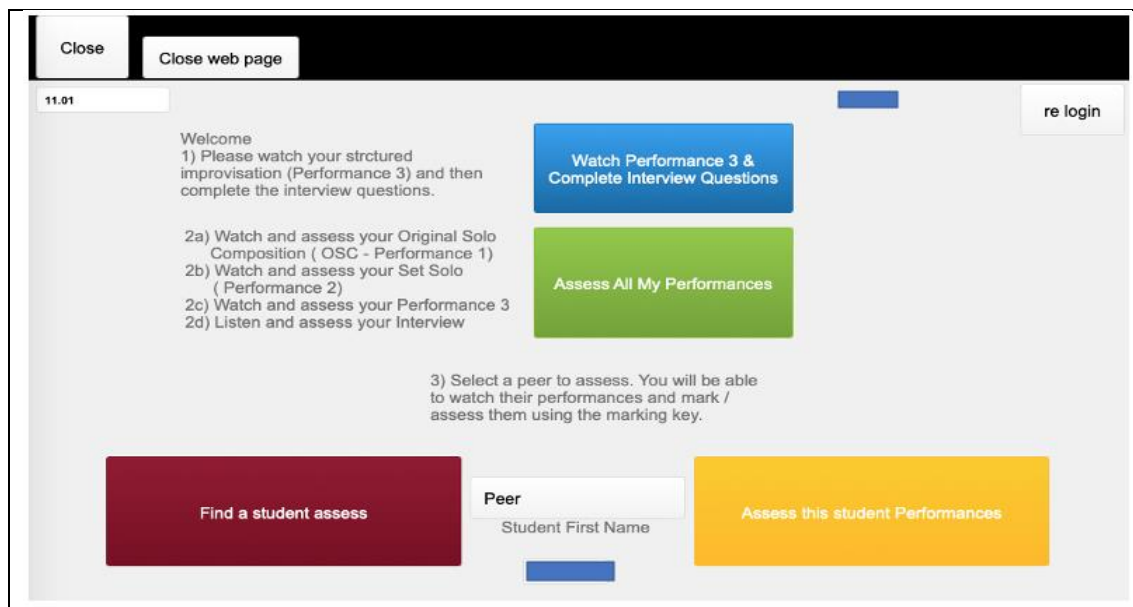


Figure 3.17 Student Navigation Page

The literature review attested to positive findings in relation to online interviews associated with digitised LOTE examinations and the interview section (Williams & Newhouse, 2013). The research also revealed that students benefitted from being able to reflect on their processes and achievements in response to practical assessment tasks after viewing their recorded responses to tasks (Pagram & Williams, 2012).

Students were able to navigate freely through the application to view their own exam performance and read the examiners' feedback. The information and performances were displayed in much the same way as for examiners when they used the application for marking (see Figures 3.11 – 3.13).

Further Engagement with DAapp

At the conclusion of the digitally modified alternate interview examination, students were given the opportunity to watch their entire exam for the purpose of self-reflection and try their hand at self and peer marking and providing feedback. This activity was administered as a participation exercise, and students' marks were not used for data analysis. However, for future studies this could be hugely beneficial data. It was hoped that perceptions and attitudes towards self-reflection, analysis and assessment in a digital environment would highlight the strengths and limitations of applying technology to formative assessment, in alignment with the summative end goal.

The teaching and learning activities adopted in this study engaged teachers and students in the integrated use of ICT, digital literacy and higher-order thinking in dance. A recording of each performance, alongside the associated tasks and marking keys were embedded in the application for reflective practice and formative use by students and teachers. This part of the investigation addressed the research question: *In what ways can technology be used to support the current form of assessment?* The classroom teacher had previously taught students how the marking key was applied to illustrate what examiners looked for and how they allocated marks. The students gained further insights by viewing their own performance and that of one peer, as well as marking if they chose to.

Ethical Considerations

The protection of individuals' anonymity is a key component of ethical practice (Israel & Hay, 2006). Research procedures, informed consent, power and coercion, trustworthiness, transparency, anonymity and confidentiality, conflicts of interest and bias, cost and benefits, sensitive social and political data are all ethical issues, regulated by governments and research organisations around the world (Cohen et al., 2011). All

procedures in this study complied with the ethical guidelines stipulated by ECU. Approval for the project was granted by the Human Research Ethics Committee (HREC), project 11371, prior to commencement of data collection, including information letters and consent forms, as well as all data collection instruments.

My guiding motivation to help students gain better marks and understand the strengths and limitations to digital assessment in dance was well within ethical considerations. However, I was aware that I was dealing with an alteration to the regular assessment of students, which could have had ethical repercussions if measures were not put into place prior. It was difficult to argue that the research would not impact on assessment as that was the entire point of the research. However, I was aware of the power differential between teacher, examiner, student and researcher and ensured participants were aware that the results of the usual method would be ultimately what was recorded as part of the school-based assessment.

Process for Obtaining Informed Consent

The key stakeholders for the preliminary interviews were all approached and invited to take part in the research project via telephone or in person. They were informed of the details of the project, that their identities would be protected and that they were free to withdraw at any stage without any implications. Once they agreed, they were then given an information and consent letter which they then had to sign before participating in the project.

Thereafter, the participating school was approached by telephone, followed by a visit from the researcher to the head of department. The head of department sought permission from the principal, who was presented with an information letter and consent form outlining the details of the project. After the principal and head of department had signed the consent forms, the teacher informed the students about the project and explained that they would not be penalised in any way if they chose to decline or withdraw at any stage. They were also advised that their school-based assessment would remain unchanged. The information letter and consent form were sent home for parents to sign and verify their child's participation in the research. The teacher and 20 student participants belonged to the Year 11 cohort at the participating

school and were enrolled in the 2016 ATAR dance course; the sample size constrained by cost, resources and available administrative support.

The eight markers were the last participants recruited. Six of the markers were selected for the live marking by the head of department according to the usual selection criteria. The remaining two digital markers were recommended by the head of department (also markers for their school) and contacted by telephone. All markers were experienced teachers and had previously examined the ATAR dance course. Like the other participants, they received an information letter and were required to provide consent, after being informed that they would remain anonymous and all collected data would be deidentified.

Anonymity and Confidentiality

Privacy of the participants was maintained by assigning identification codes or pseudonyms to individuals after the data were collected and prior to analysis, which only the researcher had access to. Digital data were stored in a password protected computer at ECU and all hard copies were stored in locked cabinets in the CSaLT office, to be destroyed after seven years. None of the students had any physical or learning disabilities that needed additional consideration or modification of tasks and activities.

Limitations

At the time of the research, high-stakes assessment of the performing arts and dance in WA were marked according to an analytic marking rubric and set of criteria against which a score was awarded. The descriptors for each criterion determined the required standard, and judgements were made accordingly (Thorndike & Thorndike, 2010; Warburton, 2006). The abstract nature of creative work made judgements somewhat complex for examiners, as noted in other studies that highlighted concerns about the validity and reliability of analytic marking (Humphry & Heldsinger, 2014; Miller & Linn, 2000). Other investigations found the use of Rasch modelling and the pairwise method of marking more reliable (Jones et al., 2015; Kimbell, 2012; McMahon & Jones, 2015; Newhouse, 2017). Unfortunately, the parameters of the current study prohibited the use of that method, and instead, adopted an analytic approach to the practiced

framework. Standards and marking followed PISA (Program for International Student Assessment) and IB (International Baccalaureate Organisation, 2019; School Curriculum and Standards Authority, 2018; Williams & Newhouse, 2013) guidelines for tracking and comparing outcomes over time and across jurisdictions, in compliance with Australian and international assessment procedures for university entrance examinations.

Technology can also be used to create digital portfolios of creative and technical processes. A digitally enhanced formative approach offers numerous advantages over summative assessment. Documenting students' work is widely considered a successful model for actively engaging students and teachers in creative learning and making meaning out of their experiences (Richard, 2015). In dance, this can be achieved with technology, including video recordings, audio recordings, photographs, and written reflections. As an educator, I place great value on documenting process, and highly recommend a larger study on the impact of technology on formative assessment. Using technology to document processes is already established in dance practice and dance education and warrants further investigation.

Limited time and resources allowed for only one round of data collection each for school-based assessment and digitised examinations. Multiple rounds will in all likelihood provide more comprehensive insights into the validity of digital assessment. Nevertheless, multiple opportunities for implementing the technology during the data collection phase enabled the collection of rich data and uncovered several other benefits.

The sample size, considered relatively small in traditional research (Cohen et al., 2011), represented 9% of the total dance population undertaking ATAR dance in 2017 in WA. Since all school-based assessments took place around the same time, it was simply not possible to extend the resources, comprising one researcher on a limited budget and timeframe, to additional schools.

Chapter 4: Responses of Participants - Digital Technology in the Applied Curriculum for ATAR Dance

This chapter presents the findings from the interviews with stakeholders regarding dance, technology and assessment. The interviews took place prior to the digitally facilitated dance examination. Stakeholders comprised curriculum specialists, senior markers, examiners and experienced teachers. The story of the findings therefore starts at the beginning, uncovering the strengths and limitations of technology use within the teaching, learning and assessment of dance as perceived by key stakeholders in the field of secondary dance education. The analysis of these findings introduces new knowledge to the field of how technology is used both formatively and for high stakes assessment in dance. In addition, issues surrounding the original construct are uncovered. Discussions with the key stakeholders' centre around the parameters of assessment, technology, curriculum and pedagogy. The findings from this chapter therefore make a significant contribution to answering the research question:

In what ways can digital technology be used to support the current form of assessment?

Table 3.2 provides a description of the participants, their usual academic roles, and their roles in the study.

Technology in Summative Assessment

The following interview excerpts from the key stakeholders highlight the notion of using technology in the preparation for and during examinations and what they believed the possible benefits and limitations to the use of technology in assessment may be. Discussions predominantly centred around the parameters and principles of assessment, such as fairness and equity, authenticity and discrepancies between examiners' marking. Concerns around the authenticity and representation of a dance performance through the digital medium prevailed, with participants preferring a live performance during an examination. However, prior to the digitally facilitated assessment, some advantages of using technology in assessment were acknowledged:

M (researcher): From an examiner's perspective, how do you prepare the markers for the examinations? And does technology play a role in preparation for the exams?

Alex: Yeah, it does, we have a meeting where they get to mark live candidates and also recorded, so we use, laptop, projector, to show them video samples of students who have been in the courses previously, as you can't mark students that are currently in the year 12 course, and we go through, and we analyse a candidate so that they get an understanding of how they need to mark.

M: Okay, so the digital representation of the dancing body is a valid form of training?

Alex: Yeah, it is. It doesn't give you that sort of 3D emotive effect that you get when you're doing a live candidate, but because we need a number of samples we can't expect, you know, 15 students to come and do a live mock exam.

M: Yep.

Alex: So we normally get 1 or 2 students, where we run a whole exam live, so they actually get to see what it's like, then we go through a digital version of a recorded student and we talk to them about, okay yes, you can't get that overall 3D effect, but looking and using a marking key and looking at the overall picture and alignment and the way that they work, you should be able to get a decent understanding, coz a lot of teachers still use video to record their students exams anyway because there's only so much you can write and mark on a live candidate, so you have to go back and watch, so it's still quite valid.

Alex reported that video recording was being used by some teachers in school-based assessments because marking live performances only allowed a limited time for viewing and writing down comments (Wren et al., 2013). Alex acknowledged that

markers in training sometimes had different opinions about marks allocated for a performance:

Alex: we go through quite a lengthy discussion and explain, sort of why. The panel who has selected the works actually go through their and actually come up with that final product or that final mark for that student. So, there's a lot of discussion and normally they can sort of see why, because they normally take their own feelings as oppose to using the marking key, so even though it's a 2D video, as long as the marking key is being used it should still give you the same result.

The marking key was discussed prior to the examination training to mitigate against subjectivity and increase agreement amongst examiners. Alex commented that when the marking key was understood, the marks awarded by examiners were more closely aligned, thereby enhancing the validity of the recorded image as a tool for training markers. Alex also stated that recording live examinations was beneficial for markers who often missed parts of a performance when they were writing down notes. Moreover, it enabled review and adjustment of scores.

Alex: Look I think for a marker, I think probably being able to, having the ability to record I think as well,

M: Yeah? (questioning)

Alex: Because you've got that seven minutes where you're doing a lot of discussion so you can always watch back and go, "have I marked correctly?" Because you're always trying to write and watch at the same time, so if you look down you miss stuff.

Fairness and reliability can be compromised when parts of a performance are missed during examination. In the case of recorded performances, discrepancies between markers can be addressed in the seven minutes between performances, to review and justify marks.

Stella expressed concerns about using technology to support summative assessments. She questioned the authenticity of videoed performances because they had a tendency to flatten the performance. In particular, she worried about the imperceptibility of small movements and gestures, claiming that creative aspects of predominantly static choreography featuring numerous small gestures were difficult to mark digitally.

Stella: as soon as you video a dancer you are seeing it as a 2 dimension and the performance loses something, compared with if you are seeing a live performance. Initially when the exams were being set up, the parameters of the examination, there was some interest in videoing it.

M: Yeah?

Stella: and we strongly disagreed with having it videoed. One of the main reasons is, the fact that you lose so much through the camera. You lose performance persona; you'll lose any little gestures that are made.

Depending on how close the examiners were or whether they faced the performer, the same argument could apply to live performances. Nonetheless, Lottie and Natalie had similar opinions:

Lottie: I don't think that's the only way to assess the students and I think, definitely you're not having the same, connection with a video recording, so I think if you're using that solely as your assessment of a student in the space, you're not going to get the same results that you would get if you had a student physically in the space.

M: And what's your reasons for that?

Natalie: 2D versus 3D. And the way they use the space and the way, you know, depending how good the video is in the first place, which

usually it's not, you know, you really can't get how they put across their intention effectively.

Lottie: their personal connection, there isn't not that same personal connection, whereas if you were in, if you're looking at your top performers, your top performer filmed, will still manage to get that, probably that connection through, where as a performer that's you know, like a younger, well, most people would not get that same quality, I think, across.

M: So more as an enhancement to an assessment?

Natalie: Yeah, as a back-up plan.

Lottie: To double check.

Natalie: Because as you're assessing, you're writing your notes.

Lottie: you're looking at, say if you are looking at it for a technical point of view, you're looking at it more than one student at a time, you're writing or typing, I quite like using my iPad to type because I can touch type pretty much without looking which is pretty good, whereas I can't do that with writing.

Both teachers referred to the loss of quality associated with viewing a performance onscreen, intimating that the performer's intention is indiscernible. Natalie suggested the quality of recordings may be a contributing factor. Lottie expressed the view that recorded performances captured everything that was needed for more experienced dancers, but for younger and less experienced dancers, it may hinder the examination process and raise equity issues. The loss of performance quality through filming was raised by the majority of stakeholders. Issues regarding the authenticity of performances in summative assessments were also a common concern. These factors were raised throughout the investigation and may be reflective of Newhouse's (2012) finding that some educators prefer to view a live piece of work. Lena and Lily provided the following account:

Lena: Ah, I think it (technology) would be a good tool to use for an assessment as in to support what your marks are, yeah. But if you really had the time to look at the nuances of movement, it probably would be a really nice tool to use.

Lily: Yeah, or to remind yourself, say if you've got 25 students you are marking on a live performance, is that what you mean?

M: Yeah.

Lily: And then you can go back.

Lena: And you see, oh what was the presentation, because I know what they did in rehearsal.

M: Yes.

Lily: Yeah, that would be good.

Lena and Lily acknowledged that technology was useful for supporting examiners and enhancing the reliability of scores, but time and resources constrained implementation. Like Alex, they agreed that digital representation could be used for reflection and checking performances. Lottie reported that she was already comfortable with technology, preferring to touch type on an iPad rather than risk missing parts of a performance by looking down at a piece of paper. Nevertheless, they both claimed that time for reflection was an issue. Other research found the benefits of an enduring record and backup for reflection and moderation valuable (Wren et al., 2013).

Marking, Discrepancy and Subjectivity

When discussing marking during examinations, discrepancy of scores between markers came up repeatedly:

M: When the actual exams are taking place, is there ever much difference between what the markers initially give before reconciliation?

Alex: If anything, I think there's probably two marks, mainly two, occasionally there's been three marks, but other than that there's no real, a lot of them get the same total but in different criteria, the authority wants us to be on the same at each criteria, then that's where it differentiates.

There is an indication here that examiners although often being able to mark within two marks of one another and often have the same score overall, there are still discrepancies in the allocation of the marks at different criteria. Thus suggesting that the allocation of marks within the marking key are open to subjectivity or misinterpretation and could possibly effect the reliability of the score (Dorn et al., 2004; Koretz, 1998). Or possibly, markers may have missed something whilst looking down to write and thus score the performance differently.

M: So, do you think that there should ever be video used in an exam at all, for evidence of assessments and, in case markers do differ in their marks?

Alex: Do you mean during the exam process?

M: Just as an assist.

Alex: Yeah, I think it might be beneficial, especially if you're looking for works the following year for the markers, at least that way, they get to see the actual, exam day, whereas the workshop we have given previously, are from a mock exam, so a kid usually has 3-4 weeks. For example, the marker might give the video a 16/20, but on the day, they might get 18/20, so they've had 2 weeks to perfect it from.

M: Yeah.

Alex: So, does that make sense, I think if we had probably some videoing of the works during [of] each candidate, it would be beneficial to go back, especially if there's any large differences, where the chief examiner has to get called into say, why is this student on a

20 when in class, they got a 10 out of 20? Like if there's something wrong there, at least they can go back to a mark, you can go back to a video and watch it and say well, this is what happened, and this is why the marks went up or they went down.

Alex was of the view that technology played a positive role in supporting summative examinations by providing evidence of discrepancies between the exam and school-based marks (the overall grade is split between the examination score, worth 50%, and the school-based mark, worth 50%). School-based performance examinations replicate the final external evaluations, with potential training and moderation benefits offered by integrated technology.

Natalie also believed there should also be recordings of the performances to help reduce discrepancy and verify marks when examiners have different opinions:

Natalie: I think it actually would, I am to be honest I am surprised that for such an important exam, that it (technology/recording) isn't, because I think that there are times when examiners really do have different ideas about it, and maybe it would, maybe you could just take it outside and you know, have an extra half hour at the end of the day for any, you know, throw it out for any other examiners to have a look at as well. But someone (examiners) would see it flat (2D) wouldn't they.

Lottie: The problem also, it's not necessarily equitable if we did that, so if every third student you went, ah, we just need to double check that, then you're going to check the, you know, the line score, the line video or whatever it is, but you didn't do it for every student so, so you're assuming just because you didn't disagree, that you are right, that you saw everything.

Natalie: I wonder if it would be helpful, for those times when the students put their hand up and say, "oh the floor was sticky", and that really made a difference or, you know, put in some complaint at the

end, misadventure form, yeah that would definitely have to be looked into, I agree.

Lottie: You have, in terms of marking in that situation, you prepare the markers with your meeting and your samples, you have set material, the markers are experienced. They have an analytical marking key, which has been dissected and explained and you're marking to that. I would say that most of the time you are on a par with each other.

Natalie: Yes

Lottie: And it's usually only a difference of one or half a mark, which you then adjust together.

Natalie: That's true.

Lottie: I'm not sure how much of a difference it would make.

M: Yeah, because I remember at one of the marker training meetings, I think it was this year in fact, there was a huge difference.

Natalie: Yeah, there was a big discrepancy.

M: It was eight or nine marks.

Natalie: And nobody even agreed in the end, they went, "no that was" (their mark)

Natalie acknowledged the discrepancies between examiners during examiner training sessions. She believed technology would play a positive role in addressing this problem. The discrepancy was likely due to the subjectivity within marking and possibly not having the option to view the performance again to clarify anything that may have been missed. Also acknowledged are the times when a student puts in a misadventure form, for issues outside of their control, for example sticky or slippery floors. The capture of a performance would help to verify such claims. Issues around reliability in marking and fairness in exams is again signalled (Dorn et al., 2004). The rigorous training upheld by the examiners in training for the ATAR exams alleviates some of these issues,

nonetheless, this training is only privy to the examiners for the ATAR exams and not school-based teachers and markers.

Lottie raised the possibility of inequities with recorded performances in situations where one student's work is reviewed to clarify discrepancies, while another's is not. This is directly related to the parameters of assessment and fairness highlighted by Stella and Alex, when parts of a performance are missed or examiners make mistakes.

Stella maintained that technology provided benefits in summative assessment by enabling markers to review performances and check their own marking *and see the performance again if they think they've made a wrong decision*. However, she argued that the parameters of assessment with technology would need to be rigorous to ensure each performance was captured consistently across different examination rooms to ensure equity and fairness.

Stella reported that the pairwise method was used to obtain achievement standards for the P-10 Australian curriculum: *because it's a true, it's a tried process that gives you the truest evidence you can*. Based on the requisite statistical moderation process whereby school marks are moderated against exam marks, she claimed that an absolute exam mark was not possible using the pairwise method, *because in WA historically, and this would be for the future as well, 50% of their final mark comes from their school-based assessment*. Currently, performance examinations are principally governed by the summative evaluation model, one that continues to be used despite the availability of a more successful model (Heldsinger & Humphry, 2010; Pollitt, 2012). This also signals the notion of the power hierarchy and entrenched structure at play with summative dance assessment in Western Australia, alongside other counties and their dance assessments (Stinson, 2016b).

The participants discussed their perceptions of the strengths and limitations of technology in high-stakes assessment and indicated that moderation, training, and standards required further development to reduce inconsistencies in marking. This was consistent with the findings of a study by Newhouse (2012a). However, time was a limiting factor in engaging with such technologies. They also challenged the authenticity of digital representation of dance performance, preferring to view live performances

because they believed recordings reduced the onscreen images to two-dimensional representations and lacked the energy of a live performance.

All participants commented on parts 3 and 4 (the Structured Improvisation and the Interview) of the performance examination, revealing the perceived strengths and limitations. Stella acknowledged that statistically, the exam as a whole assessed the candidates well:

Stella: It's a really smooth process, you have a group of markers who are really slick in their job at the moment, they know what they are doing. I think it's ranking the kids really well, and the stats are proving that.

Although the examination overall ranked the candidates well, Stella believed that part 4 of the dance examination - the Interview - proved to be the hardest part of the exam, where the candidates usually scored lowest in this section of the examination. The following discussion addresses this aspect in further detail and explores the possible reasons for poorer outcomes in the interview, as understood by the experts in the field.

The Interview and the Improvisation

Stella went onto say that despite the interview being hard to articulate in the exam, thus making it harder to score highly, this harder component balanced out the exam because the other performance areas were statistically higher because candidates scored higher in the other areas of the examination:

Stella: I think the interview section actually balances it out, if you didn't have that interview section there, with that lower mean, you would have a very high prac (practical) mean.

M: Yeah.

Stella: Which would be of concern then, we would have to have a look at the marking and say well, why are we getting a 68% mean with the interview? And again, because it is hard to articulate what you're trying to say.

Alex offered the following account which in part agrees with Stella, however, believed the lower scoring part of the examination for the interview is possibly unfair because students are seemingly not able to answer the questions adequately as the examination currently stands:

Alex: Look improvisation I think is good, there's a lot of scope for the students, it's part of the course and I think they should get examined on it and over the past years it has improved, and the interview section, I think the students should be given 1 or 2 questions on a piece of paper and then given probably a couple of minutes to go through it and formulate their answer, and then they talk to the panel or the examiners.

M: What makes you say that?

Alex: Because asking a kid on the spot, that's quite intimidating to them, they've got to think off the top of their heads and I don't think that gives the students enough justice because a lot of the kids can do really well in section 1 and 2 and 3, and then all of a sudden in 4, and then you go well hang on a minute if they got 20, 25, 10 (top marks in all other performances) and then a 2 in the Interview, obviously they're strong, even physically, so they must know the syllabus, if they know it physically they should know it mentally, and the interview should be as high, but as the nerves kick in and they only hear parts of the questions.

M: Yes.

Alex: And I think it's also because there's a 3-minute time limit that they have to answer 3 questions, you've got to ask 3 questions, whereas if you give them those 3 questions and say, go away for 5 minutes and read these questions, and so it doesn't mean that each kid gets the same one, you can have a bank of them and go, ok, you're going

to get these 3, give them 5 minutes to formulate their answer and then say, ok, this is it.

M: So, you think nerves and no time to think has a lot to do with them not being able to answer the question?

Alex: Yes.

M: Because the stats prove that they struggle in part 4?

Alex: Yeah, they do, over east they actually get given one question, every student is given one question, and they get 5 minutes preparation time, and basically, they talk to the marking panel.

The slight contrasts in opinion (between Stella and Alex) possibly stem from their varied understandings around the assessment, their employment positions and what they are willing to discuss. However, this difference may also reflect a fundamental educational philosophical difference, that meaningful reflective practice requires time, rather than spontaneous verbal engagement and response.

Lottie and Natalie had some similar opinions to offer regarding the structured improvisation and interview:

Natalie: Personally, I found I hadn't marked for 2 years, and I found there was a huge improvement in that the interviews were mostly passes and the improvisations were really quite good, mostly quite good for the passing students, a strong part of their exam. Personally, that's what I found, what about yourself? (to Lottie)

Lottie: I think if we look at that very first year of marking and the types of, the way the improvisation was set up, it was extremely structured and the students, we did have a range of students at that time, and some of the students really struggled with that concept, since 2009. So, teachers have an understanding of what's expected. Students, I think mostly are well prepared for every, for all of the time that I've marked. I would say that each year it gets better and that each year,

students are prepared for each section of the examination, some students are better prepared than other students, I think that in the improvisation section, there is no question of those students, that they are absolutely able to do that task and do it well.

This suggests that the teachers were learning the examination process along with the students as the curriculum was implemented. They went on to say:

Lottie: I think the same is with the interview. I think that some students are not as confident with the interview.

M: You mean as in speaking and nerves?

Lottie: Yeah, so I think they are not as confident, because that's just the nature of being in that situation. I think both sections are a really important part.

M: I agree.

Natalie: I like the interview because it links with the theory, and you know, just, it brings the subject to a whole cohesive.

M: So, do you think, maybe for those students across the board, that do find it difficult, the interview, would that maybe a piece of technology would allow them to type their response, so read the question and type their response or speak their response?

Lottie: No.

Natalie: No, I think it should be live. Because they have the opportunity to do that in their theory exam.

Lottie: It's about providing educative, articulate dancers, and I believe that's what we should be doing, so I don't want to do anything that's not going to allow those students not to have a voice. And I want them, to teach them to be able to speak about what they've learnt.

What Lottie and Natalie suggest is that along with Stella and Alex, is that the interview is not only a valid part of the examination but a critical component of aligning teaching with assessment. Perhaps this is not only an issue of confidence in the moment (with stress and nerves) but also that the students need to be educated in how to articulate their dance process in order to be better prepared for the examination. What is clear from Lottie and Natalie that they do believe that the interview should not be recorded. The following excerpts illustrate there could be a middle ground reached with Lena and Lily offering the following account.

Lena: I think the interview, it's getting better, but it's still the hardest component, because they are fatigued, they are nervous, and their articulation - they are still struggling with what they are having to articulate what they have done in the space, into words.

M: So, do you think it would be beneficial for the students to respond in a different way?

Lily: Yes.

Lena: Or, yeah, having a visual.

M: So, take away the interview, actual speaking to an examiner?

Lena and Lily: Yeah.

M: And what about if they got a chance to see what they had done in the improvisation as well. Do you think that would help or not?

Lena: That's a good point, because a lot of them can't remember what they've done, so that would be useful.

Lily: That's true, it is structured, but it is spontaneous as well.

Lena: Yes, and they are also nervous as well, so they forget what they've just completed.

Lily: I think the reality is too that lots of students, even though they are highly structured (the improvisation), very few in 13 candidates,

will actually fulfil every single component of that structured improvisation. Those set parameters, they kind of [the students] do fluff their way through it a bit, I think.

Lily: So yeah, being able to see what they visualise, before they respond to a question, would be good.

Although Lena and Lily were of the view that the interview section of the examination was problematic for candidates because they found it hard to verbally articulate their creative choices into words, they also believed that the improvisation, a prerequisite to the interview, was also part of the problem. Evidently all interviewees found the interview to be a challenge because candidates found it difficult to respond effectively in the given context. The findings from these interviews also gave rise to a variety of other areas where a desire to use more technology was apparent.

Technology and Formative Assessment

Throughout the interviews, I discovered how technology was currently being employed through the applied curriculum and as part of assessment, thus, proving relevant to be able to interpret the reasons why and ultimately, if technology could assist with the assessment of dance. The following discussion of results centres around the themes generated from participant interviews, which also later patterned across the data set at the completion of the data collection. An interesting dialogue emerged between not only the differences in ways teachers from the same school used digital technology, but also between different schools and the allocated resources and training deployed at their discretion.

Formative and Reflective Practice

All participants interviewed recognised that mobile technologies played a part in the formative aspects of teaching and learning to aid critical reflection and insight into improvements in technique and performance and/or development of creative ideas in preparation for the examinations. A finding synonymous with other research that found

reflection assisted by technology was advantageous (Doughty et al., 2008; Doughty & Stevens, 2002; Leijen et al., 2009). For example, Alex stated:

Alex: We use laptops mainly in our lower school for getting them used to writing reviews, critiques viewing dance works online. Year 9's we use video cameras and videoing editing software, basically they get to create their own dance video. They film themselves doing dance or choreography around the school and outside school, and then what they do is use the editing program to actually choreograph the dance so it's, at the moment we're using adobe pro and final cut on mac books, so that's theirs. In upper school, we use a program an app, and iPhones, Coaches Eye, we video students doing exercises or set solo and so on and get to watch it back and see themselves and analyse their alignment.

M: So that's part of their reflective practice?

Alex: Yeah, that's their reflective practice. And we also use a program called Dance Forms or Life Form from over east, where students actually use a virtual body and choreograph a routine, so if they're actually injured, they can actually choreograph a routine on a computer and put their music to it, so you can convert to a video and watch their composition.

M: How do you feedback to the students? Do you do it online or verbally?

Alex: We do both, we do it verbally plus we also have a program in the department Connect, which is an online sharing for the class, so kids can upload their assignments or download, and I can then provide feedback on that, and if they give me stuff electronically, I normally edit it electronically and send it back to them.

Alex reported that technology was applied in a variety of ways to different components of the dance course in lower and upper school, suggesting confidence and

experience played a role in determining the implementation of technology and using the online platform, Connect, to provide feedback. I asked about technologies in upper school in preparation for assessment:

Alex: Yep, yes, so basically, well they get the DVD to watch, you know they get the DVD to watch to learn the set solo, where they will use the TV, computer, each student gets a copy as well, of the dance exam, or the work for the exam, so they get to watch it, analyse it, study it, break it down into frames, so it plays a huge part in the teaching of, in that section.

Alex explained that students watched a DVD to inform their learning of the set solo for the practical exam, for the analysis of a professional work for the written paper and was aware of differences in the way teachers used technology in other components of the exam:

Alex: The original solo composition, look, I don't know whether a lot of teachers use technology in that.

M: What about in the purpose for a portfolio, a digital portfolio for choreographic process?

Alex: Yeah, look I think that's a great idea, I used to do that when I actually taught the year 12's and every time the kids did their composition task, they would be given a video camera and they would film each choreographic lesson, so twice a week, they had 5 lessons a week, 2 choreography, twice, set solo or technique and 1 lesson was theory. So, the 2 compositions I would get a video and I would film them, and then they will actually make up their e-folio so, they could see their progress and go actually, this is what I did in the composition oh, I like this section, I'm going to keep phrase 1 and put that in here, and/or I didn't like.

M: Okay.

Alex: Or, even with the set solo, they could video themselves and then later on analyse it back.

M: Yeah.

Alex: I think technology for that purpose is really, really good. Again, whether the schools have the technology, that's another issue, I think it's really great for upper school. In here at my school they, we're a technology school, but at the moment I don't have the upper school kids to do that with.

M: Yeah.

Alex: whereas if you've got a school, a private school or a public school, who have got the funds to get the video cameras, depending on how many kids are in the class, otherwise you know, kids can use their phones as well.

Alex highlighted that the application of technology is really left to the choice of the teacher within the classroom for formative assessment and that it is often down to resource availability within the class/school.

Resources

Teachers from another school talked about their use of technology in teaching and learning in dance as follows:

Lottie: In a limited way. We currently use, most of the students will have an electronic device, either an iPad or a laptop. We have a trolley of laptops we use in classroom so we can usually access, that's to mostly, do research, and that's probably the most that they are used for in a classroom.

M: Okay.

Natalie: In terms of the students in terms of my practice in the classroom with IT, I play videos.

M: Yes.

Lottie: That's pretty much it, and I play my iTunes.

M: Yeah.

Natalie: For ballet music. We do actually have a set up facility, we have a smart board, but we haven't had instructions on how to use that.

M: Oh, okay.

Natalie: So, I would like to see us use more.

M: Ah, so what I was going to say is, what are the reasons you either do or do not use technology?

Lottie: So, one more thing in that we do actually, we are using technology for, we will record snippets or small shots of the students for their original solo composition, we might record the students and the set solo and we might give it to them so they can put it onto their device, so they can have a look to see where they're at.

M: And you find that useful?

Lottie: That is useful.

Natalie: Certainly.

Lottie: It is useful.

M: So, is that how you would employ reflective practice?

Natalie: One of the ways definitely.

Lottie: Yeah, one of the ways you add to your reflective practice.

Natalie: You also have the data projectors which are in the studios, so if you really wanted to do some research or show some YouTube you can google it on your own. So, I think that's similar to a whiteboard, smart board, I think that's similar practice, but again, not quite sure.

Yeah, so you can do things like that, and of course, show all the information.

M: So, do you look at technique when you are doing your reflective practice or choreography or both of those things?

Natalie: Yes both.

Lottie: Both.

Although these teachers showed their students recordings of their performances to improve their choreography and technique, they did not indicate that they discussed the performances with students immediately after viewing them to assist their preparation for the interview. Lottie suggested that video could play an important role in improvisation for generating content for choreography:

Lottie: We talk to the student, we say, you develop your own intent, then you're going to give yourself some improvisation tasks, you might have developed some key words that you think relate to your intent, and you're going to improvise on these words, or you might have some other tasks that you want to do, and then film the improvisation, then use your filmed improvisation as a basis. Because, you know, it is hard to remember, you know if you just jump around the space improvising, then you have to remember that. That's not really the purpose of improvisation, the purpose of improvisation is to explore a structure or a task or an idea, not necessarily to go, oh I have to remember that movement or phrase.

Interestingly, Lottie recognised the importance of viewing an improvisation, albeit to generate movement for a piece of choreography to be able to extract valid content. However, the exam also requires the ideas of the improvisation to play out as part of the exam. Here possibly lies a contradiction in the format of the assessment and best practice. As Lily revealed earlier, it is hard for students to remember what they have just done in an improvisation, to then be able to articulate effectively about their choices, especially in an examination context.

Teachers Lottie and Natalie were quite different in their use and application of technology through their dance classes compared to Alex. The formative benefits of reflective practice and the use of technology to support and enhance understanding within technique and choreography was also deemed beneficial by Lottie and Natalie. However, they do not employ other forms of technology in the same way or for the same purpose. Natalie believed that more training with the use of technology already available to them, to effectively implement it into their practice would also be beneficial. This supports the notion by Alex, that teachers are bound by the resources available to them, and indeed their experience or training of these, and this could also be because of the personal experience, confidence and desire to use it (Warburton, 2004).

Lena and Lily were from the same school as Lottie and Natalie. The comments below illustrate the use of ICT in their dance classes:

Lena: We use it mainly to view works (professional companies), to view things on media.

M: Yeah.

Lena: We do use devices to record so students can look at feedback and look at their technique for feedback.

Lily: Yeah, that would be mainly the way that we use it, like using iPads and recording on photo booth and they can reflect on and watch themselves.

M: Yeah.

Lily: Like technical, alignment principles and safe dance practices.

M: So that's the main reflective practice you do is the video?

Lena: Yep.

M: How important is that?

Lily: I think it's a good tool for them to use, is a nice way for them to see rather than you just telling them. It's incorporated into their

written tasks as well. So, most of lower school will do a performance that's then video-taped and they have to reflect on that, which feeds into an upper school response.

Lena: Yeah.

M: Do you know of any other technology that's used within other schools that you don't use?

Lena: I've forgot what it's called. I heard about it (the app) years ago called, move, move something, have you heard of it?

M: No.

Lily: This was years ago, it was like a dance app that, was also (name of another school) use it. Oh, and also occasionally on my iPhone I will use a, I've got an app that's got bones and muscles on it, and you can give it instructions and it will give you an outline of which bones and muscles and ligaments etcetera are using.

M: Do the students like to use it?

Lily: Oh yeah, the kids love it.

M: More than you (laughing).

Lily: Yeah, yeah (laughing).

Lena: Like you include little ballet bibles and things like that where you've got glossary of terms and terminology.

M: So that's useful?

Lily: Yes.

Lena: Yeah, we got a ballet one which we use for glossary and it's with a video as well, it's an A to Z of ballet. And we also use technology to create, so when we are doing pioneers of dance, we look at Lois Fuller,

we ask them to use their technology to film and create, using different imaging tools.

M: Yeah.

Lena: Different images for dance. And also, PowerPoint. I use PowerPoint for my theory classes.

M: Yep, do you get the students to use that as well?

Lena: It's more of a presentational tool, right?

Lily: Yeah.

Lena: Yeah.

Lena and Lily revealed that their use of technology incorporated using power point as a presentation tool, used technology to create imaging effects for choreography and would occasionally use a ballet application for specific terminology. Interestingly, both Lena and Lily were unaware of other technologies used within other schools for support during teaching, learning and assessment of dance (such as those in use with Alex). I asked them about viewing dance digitally:

M: Right, okay, so you view a fair amount of work digitally?

Lena and Lily: Yes (together).

M: And do you feel that's an adequate representation of the dancing body?

Lena: Yeah, they are pretty good, the quality is good and they are representative, any DVD we would be using.

Lily: Yep.

Lena and Lily acknowledged that their use of technology within the dance class was used to view dance works and believed that the digital representation of the dancing body was authentic in representation. Lena and Lily employed the use of technology more into their classrooms than teachers Lottie and Natalie. Lottie also stated, *dance is about*

practice time in the space, and you need to have that time developing your technique. So, that reflective time looking at filming? (questioning). Here Lottie acknowledged that time is precious in a dance class, especially when students have to develop practical skills which develop over time by practicing in the class, suggesting that exploring with new technologies would take that time away. This could be because they require more training or possibly because dance is fundamentally about gaining physical and artistic skills which require active development over time, therefore deemed unnecessary. It could also be because of the generational differences and influences on teachers' practice which affect their choices and beliefs. Here, teachers' own attitudes and skills influence their uptake of using ICT, thus in alignment with findings from other research (Brown et al., 2015; Erstad & Voogt, 2018). Even when technology in schools is available, it is dependent upon the practice of teachers to implement it. A guide for implementing such technologies and how to incorporate them effectively, possibly requires development. Although there appeared to be differences in the uptake of technology with different teachers, there was also an acute awareness of change and a willingness to explore new possibilities.

Receptiveness to Change

Developing teachers' use of ICT was discussed in the context of continual change of technology in dance education.

M: Okay, so with the new ATAR course out now, do you believe there's a desire for an increase in the use of ICT in teaching, learning and assessment?

Lena: It's not explicit, I know it's meant to be there.

M: Desirable?

Lena: Yeah, but not explicitly there. If that's what they are intending, it's not explicit enough in the new course.

M: Okay, do you think it's important that it is developed or not really?

Lena: I think we probably should.

Lily: I think if we want to keep up with what's current.

Lena: With the times, yeah.

Overall, teachers exhibited a desire to maintain currency in their practice, particularly when culture and industry were so significantly impacted by technology. This notion aligned to other dance educators in the field, for practice to align with the changing demands of the technically developed world (Brown, 2015; Brown et al., 2015; Phillips et al., 2009; Stinson, 2016a). Lottie and Natalie claimed that the demands of the current curriculum and limited time hampered their freedom to explore the use of technology in teaching, learning and assessment.

Lottie: But time is always the curse.

Natalie: It's always the curse.

Lottie: So how much time do you devote? I still don't have enough, see if I look at myself, my program, I still don't have enough time to do all of those things that I want to do in my program, then what gives? What do I shift?

Natalie: Whatever's more valuable and seems to work faster.

Lottie: I'm open to new ideas and exploring different things, but it is about finding the balance and what works.

The integration of digital technology appeared to be somewhat constrained by the demands of the curriculum, which, linked to historical assessment practices, signalled a possible misalignment. Stella talked about the traditional use of video to support dance learners and proposed adopting new advances in technology.

Stella: It certainly is one of the general capabilities, ICT yeah, the use of ICT. So, in terms of implementing it in a dance classroom, (pause/thinking). The feedback, where they watch their work back, you could get them to, you could interview them after they have watched their choreography back, or they could do a written response

as well, so, but that's all, teachers have always done that. Performances are always videoed.

M: Yeah.

Stella: But in terms of a feedback loop, I don't many I don't know if teachers actually do, where the kids look at themselves and then start critically analysing their movement as such. I think it's got a really good place there, it's the same as doing it in-front of a mirror really, but at least you can slow it down and you can see it, and with that, if you, if you sort of had that motion tracking, with the 3D and you could see their arms in space and that kind of thing, that might be really helpful from an anatomical and biomechanical point of view.

Overall, the participants appeared to differ in how they engaged with the curriculum and incorporate the use of ICT/digital technology to support not only the modern advances in technology but also the modern learner. Digital literacy and the implementation into the taught dance curriculum are an expected capability, however it is apparent that it is not explicit in dance specific contexts for these stakeholders to confidently adopt to support both assessment and learning.

Interestingly, the notion of collaborative learning was seen as beneficial to these dance educators, however, there were limitations as to what they could do based on the restrictions within school policy and resource availability, particularly regarding the use of digital technology.

Collaborative Learning in a Digital Environment

Interviews with the dance teachers led to conversations about collaborative learning and the use of digital technology.

M: What do you think about students sharing their information with other students and other teachers and that kind of reciprocal learning process?

Lottie: If you have to provide feedback on yourself to somebody else on a student, to that student, you are learning. You have that sharing opportunity, it means that you are going to learn from that experience and develop as a dancer, as well as sharing that information.

M: So, what about that information. Would you share that information with another school?

Natalie: I imagine that's a possibility, but the practicalities of the duty of care and privacy would just be too hard.

Lottie: So, for us to have the students filmed, all students have to have signed an agreement, and within that agreement students are not allowed to share that information, they are not allowed to post on Facebook or YouTube or any of those things. It's the intellectual property of the school and they've signed off on that. But if then you were going to share that with another school, you'd have to go through that.

M: For a moderation process?

Lottie: You'd have to go through that same...

Natalie: ...Permission.

Lottie: It's possible.

M: Beneficial?

Natalie: For moderation, possibly in small chunks, but time constraints would make it quite difficult.

Lottie: I think it's really important for us, for the students to work with other students. I think if they get that, we do that for the last, we do a weekend, where the students do theory preparation for their exams before their holidays and a teacher from another school delivers that. So, I always have those students come along too.

M: Okay.

Lottie: It's my students, and the (name of other college) students are here. I think it's just interesting. They will have learnt things in a different way to the way my students have learnt and that both have equal value, and just because it's been done differently doesn't mean that it's right or wrong. So, I do think that moderation and you know working with like-minded students is extremely invaluable.

M: Okay.

Lottie: That's why you go, you go to something like Youth Dance Festival, and you know you tour there, and you're working with students from all across the country that are doing contemporary classes and composition classes and they are learning from each other.

Lena and Lily offered the following similar perspective

Lena: I think that's really valid teaching in the year 12 course. Because it is that idea of sharing knowledge and you've got such a tight timeframe and being able to get as much knowledge as you can within that tight timeframe, would work really nice. It would be nice to actually have something.

M: Yep, so putting it within an app, like a sharing device?

Both: Yes, definitely.

Lily: Okay, and you could set it up so there's a general sharing and a private teacher to student sharing?

M: Sure. It could be part of it too, like the peer to peer and student to teacher.

Lena: And resources.

Lily: And then you can work with two or three students in the classes, and then you can go home at night, and then it will take you five minutes to have a look, a little online chat to the student and give them feedback.

Lottie, Natalie, Lili and Lena all recognised the benefits of a collaborative teaching and learning environment in dance. However, having the use of digital technology and an application that could enhance reflective practice and student-centred learning in a peer to peer and teacher to student feedback online environment was not available to them. Lena and Lily also recognised that collaborative online learning and feedback could also help with the strict time limitations that are placed on teachers to cover all content within the allocated face to face classroom time. The parameters and restraints to implementing such practices as acknowledged by Lottie, was that strict policy and procedures were in place which inhibited such developments. Nonetheless, Lottie and Natalie both believed that it could be a possibility, it would just require both more time and resources to implement, which they did not have.

Summary

All participants revealed their concerns around the digital representation of the dancing body during an assessment because of the lack of performance authenticity and performance quality lost through the screen. Nonetheless, they also believed that the benefits to the recorded footage could be used to support assessment, moderation and training to aid in minimising, or at least understanding, discrepancies in scoring, thus, presumably increasing fairness and reliability in scores. Particular reference was made to the subjectivity that goes alongside the marking of artistic and ephemeral performances when using an analytic marking key which still produced variance. Overall, the stakeholders were keen to use technology as an assistive and supportive enhancement to a live dance performance examination. All stakeholders believed that the interview section of the examination was the hardest component of the exam, indicating that students often found it hard to articulate what they were trying to say. Some believed that despite this, the interview should remain the same, whereas others believed that a different approach to the interview may be beneficial. Either way, the

students' ability to effectively engage in critical insight was deemed challenging by all. While ICT/digital technology was thought to be potentially useful in reflective practice it was never explicitly mentioned that any technology was used to assist in teaching students to better prepare for the interview.

There is an acknowledgement to the pace of change with technology and impacts upon the dance industry and a desire to keep up to date with what is current. Ultimately teachers are bound by historical practices and points of view which are still current amidst vast changes to culture and society (Stinson, 2010). The varying degrees to which they are exposed to ICT/digital technology give rise to feelings of powerlessness or uncertainty. This may well be impacting on the trajectory in context and the choices made by teachers as to which aspects of digital technology and where/how to use it, especially when the end game is not linked to the process. For changes to take place, developing a shared understanding of what works in a dance class to support assessment alongside advances in technology requires interrogation (Brown, 2015). These teachers and examiners were open and aware of changes and willing to explore but somewhat bound by the summative model, resources, policy and time. The findings not only provided answers to the ways in which technology can support the current form of assessment, but also resulted in enhancements to the features and functionality of the dance assessment application (DAapp) for the research.

Chapter 5: Discussion of Examination Results and Use of the DAapp

This chapter presents the assessment results from the two different marking methods using the DAapp. A discussion of the examination scores from the usual (live) examination and digitally captured performances highlight any discrepancy in marker scores and methods throughout the performances of the examination from Performance 1, the Original Solo Composition, through to Performance 4, the Interview. With 9% (20/216) of the ATAR cohort for the 2017 academic year taking part in the investigation, descriptive and frequency statistics are used to support the analysis of scores and how they converse within the larger qualitative framing. Statistical measures such as the correlation and reliability coefficient to enhance the validity analysis was not conducted because of the sample size was less than 30, thus not giving a true representation of the wider field (Cohen et al., 2011). Despite this, it was still possible to determine if scores in one context (live examinations) were consistent with scores in the other (digitally captured performances) to measure the targeted outcomes, supporting discussions and interpretations around the parameters of assessment such as bias, subjectivity, fairness, equity between room set up and technicians capturing performances, reliability and performance authenticity. The use of the analytic marking rubric is also discussed in regard to adequately supporting the reliability of both forms of assessment.

To support the discrepancy analysis alongside the examination scores, any likely causes of discrepancy are also discussed by cross referencing and triangulating the findings from the different data points, i.e., surveys and interviews with participants. Finally, the summary of the chapter highlights that although there are limitations to using the suggested method and DAapp in its (then) current state, there were still viable ways that the method and use of the DAapp could support assessment both for and of learning. This chapter therefore provides answers to the research question:

Are the results of assessing the digitally enhanced dance examination consistent with assessing the original and what are the likely causes of discrepancies?

The results of the live and digital modes of marking were saved in a FileMaker Pro database, exportable into Excel for further analysis. The marking interface displayed the marking keys for each section of the examination, allowing for a mark alongside each criterion. In this way, every student received a score for each criterion in all four sections of the examination, as well as an ongoing total score. Students and markers were all assigned unique identification codes for protection of privacy, with student codes made up of a random letter of the alphabet. The letters LM followed by a random number were used to signify markers who marked the live performances while DM followed by a random number was used to signify markers who marked the digital performances. The examination schedule is displayed in Table 5.1 together with assigned rooms and markers.

Table 5.1 Examiner Codes and Sessions

Live Markers	Examination Room	Duration
LM1	1	All Day
LM2	1	Morning
LM3	1	Afternoon
LM4	2	All day
LM5	2	Morning
LM6	2	Afternoon
Digital Markers		
DM1		
DM2		

Dance Examination Scores

Figures 5.1 to 5.9 show the marks awarded to students in both examination rooms for each of the four components of the examination. The scores awarded by each of the live and digital markers are shown in Figures 5.1 to 5.9 for comparison. Some markers examined either a morning or afternoon session, so two bar graphs side by side display the different markers and students in each room for every session. These were students whose entire examinations were captured in full.

Alex's confirmation of examination scores (for the entire WA markers over a number of years), only having small differences of *one or two, sometimes 3 marks*, was classified as consistent prior to moderation. Therefore, in this study, variance refers to

a difference of more than three marks (in line with examination scores and usual practice for WA ATAR Dance).

The live markers in exam room 1 (LM1, LM2 and LM3) entered their individual, moderated scores online into the DAapp in real time. In examination room 2, live markers LM5 and LM6 did the same, but live marker 4's (LM4) scores were not entered online because this participant preferred to mark with traditional pen and paper within the allocated timeframe. The results for Performance 1, the original solo composition in examination room 1 are shown in Figure 5.1.

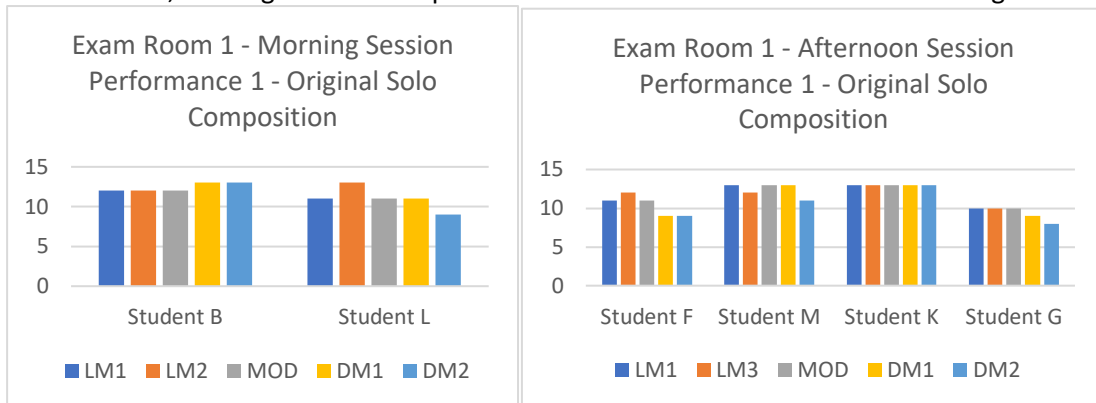


Figure 5.1 Performance 1 Scores in Exam Room 1

Consistency Between Methods and Marker Scores

The scores awarded to students by both live and digital markers were considered relatively consistent, because they all scored within 2 or 3 marks of one another and the moderated school mark. The scores for Performance 1, (the Original Solo Composition) in exam room 2 are shown in Figure 5.2 below.

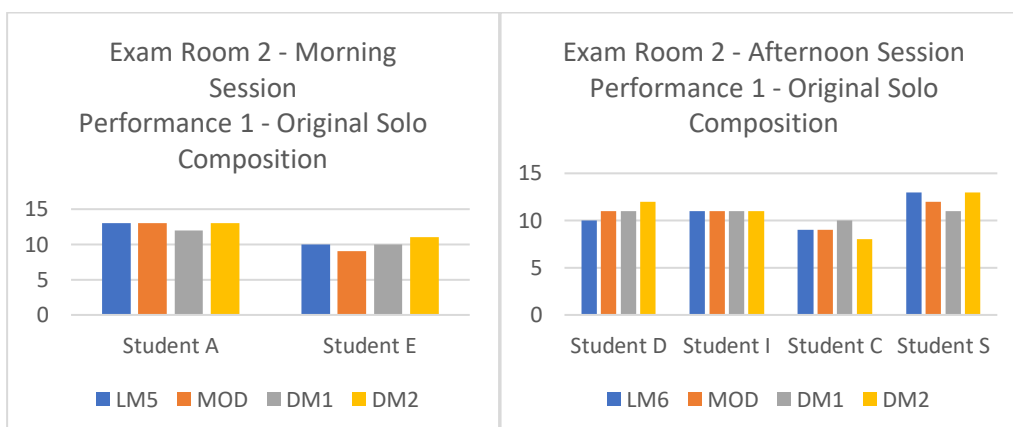


Figure 5.2 Performance 1 Scores in Exam Room 2

The live and digital markers' scores for Performance 1 in exam room 2 were consistent, scoring within one or two marks of one another and the school moderated

mark (MOD). These results suggest that both methods of marking (for live and digitally captured performances) generated similar, repeatable results.

Bias, Fairness and Subjectivity

Despite results being consistent between marking methods for Performance 1 the Original Solo Composition, notions of bias, fairness and subjectivity became apparent when analysing and triangulating the findings from different data points. This was done by cross referencing the comments made within the DAapp and discussions during interviews.

Interestingly, Student F received feedback from both live markers who typed their comments into the comments box within the DAapp regarding the Original Solo Composition:

Isolation - How can you show us isolation? The elements were clearly manipulated but there needs to be more detail and emphasis with regards to the intent. If I didn't read the statement, I should still be able to see elements of what the dance is about- how can you make the intent visible to us more clearly? (LM1)

Clear intent, nice choices in movement just make isolation bigger. Good focus and can see initiation clearly. More social definition could occur as well (LM3).

LM1 believed that the intent of the solo for Student F was not clear. In contrast, LM3, believed that she could clearly see the choreographic intention of the dance.

The digital markers had the same opinion as Live Marker 1 for student F:

There was a sense that different body parts initiated the movement, there was little sense of disconnection or isolation in either a choreographic or metaphorical sense. The movement phrase did however show considered choreographic manipulation and development of specific body parts (DM1).

DM2 made a similar observation, to both DM1 and LM1, stating, *the intent is not reflected in the movement, or perhaps not made clear enough.*

It is interesting to note that LM3 was in fact student F's classroom teacher and would in all likelihood have had a greater understanding and connection to the artistic performance, having witnessed the development of the choreography throughout the lessons leading up to the assessment. It is therefore possible that teacher bias and perceptions influence their scores and comments (Stiggins, 1987). Different opinions regarding the same performance using the same marking key could also be an indicator of subjectivity and interpretation, or markers missing parts of a performance, giving rise to issues of subjectivity and fairness (Linn et al., 1991; Madaus & O'Dwyer, 1999). It is important to mention that external examinations follow strict guidelines dictating that markers and candidates do not know one another, in order to reduce bias in marking.

Some students mentioned bias as a potential issue when they read the marks and comments to their performances:

Student K: So how you're presenting your intent, so if they (markers) haven't seen it before then, they're just going to be like, oh that's the general idea. Whereas other people (own teachers) will be like, "oh you could even further that by making it more complex" or whatever.

Student H: And there's that element of favouritism that I find doesn't work personally in my favour, I know it works in favour for other people, but there is a lot of teachers that definitely do have favourites, without saying who those favourites are. And I'm not saying that they're not really good dancers, because they are really good, but there's definitely that object of favouritism when they already know who you are.

Student K gave the following account of score variances between markers for the same performance:

Student K: Yeah, coz that's what I found like last year, I had one examiner who gave me really good marks and the other one, like it

was an okay mark, but like it was like, it was nowhere near as positive as the other one and I was like, I don't know how this works? I was like...? (shrugs shoulders).

Favouritism and bias are concerns of some students, suggesting that because they are not as popular or are more popular, the marks by the teachers are awarded accordingly. There is no evidence to suggest that this is actually the case. However, what it does highlight is that the students do not have a clear understanding of how and why marks were awarded. Student K made reference to previous school-based assessments, alluding to the fact that when they received their exam results from their teacher, they were also shown the pre moderated scores by both markers from the live marking, who marked the same exam, using the same analytic marking key yet scored it differently. This recognition that their markers gave different scores evidently confused the student who was also not equipped with an awareness or shared understanding of assessment, something found beneficial by other dance practitioners (Andersson, 2016; Stinson, 2016b). The notion of collaboration and a shared understanding will be elaborated on in more detail in the next chapters.

The following feedback comments to students from markers were captured within the application during the live and digital examinations. In this example, one examiner gives constructive and impersonal feedback to Student G around dance technique and creative engagement, whilst the other provides encouragement in a personal manner. DM2 commented, *Movement has been influenced by Set Solo, lending a predictability to the movement sequences. Alignment in plié needs clarity*, whereas LM1 provided the following comments, *You move well, and you have a strong foundation in your technique.... trust yourself. Don't look so worried. Honestly great physical potential. I am glad you picked up dance*. This feedback from the live marker and difference in approach and notion behind the feedback signals a possible issue of bias as they provide personal feedback to encourage the student which could be impacting on the reliability of scores (Stiggins, 1987). This nuance in feedback could also be because of the value each assessor places in their feedback and on the assessments, which could be because of their own inherent lens as a practitioner and previous experiences with dance and assessment.

Differences in feedback after Performance 1, the Original Solo Composition, also started to become more frequent. The next results provided are for Performance 2, the Set Solo. Figures 5.3 and 5.4 below display the results.

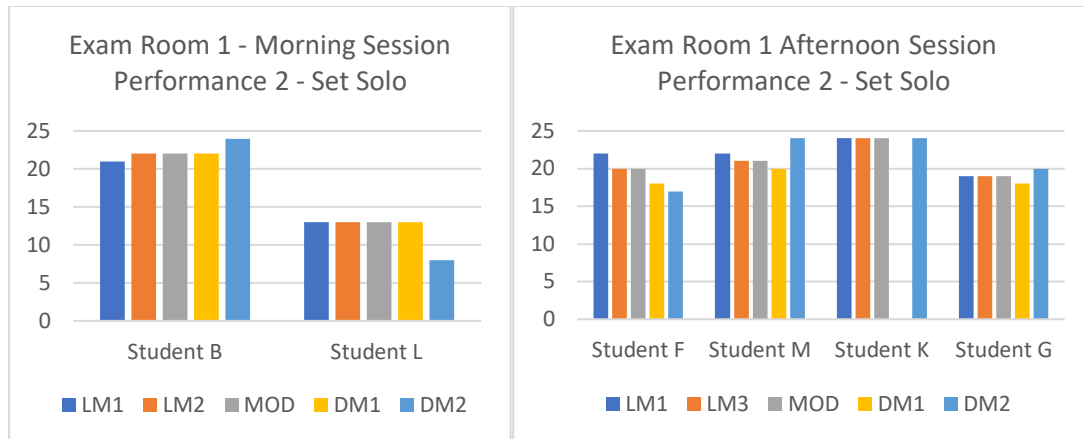


Figure 5.3 Performance 2 Scores in Exam Room 1

All markers scored within two or three marks of the moderated mark for students B, F, M, K and G. However, for Student L there was a five-mark difference in scores between DM2 and the other three markers, with the largest difference in the application of marks for criterion one (see Appendix D for marking key). This possibly indicates a different understanding of the marking key for this section because all other live and digital markers awarded the exact same score suggesting that digital representation of the performance was not an issue. A five-mark difference between live marker LM1 and digital marker DM2 for Student F was also apparent. This anomaly for Student F may be because *some of the dance was out of frame*, according to DM2 (marker comments box in DAapp). Understandably, an issue of fairness and reliability is a concern when markers are asked to mark when certain parts of a performance are out of frame and therefore missed.

Equity in Room Setup and Capturing Performances

The digital markers also challenged the fairness and reliability of the recorded performances for assessment due to the equity of video conditions between the examination rooms. Thus, they believed that the capture of the performances from the

different technicians in the different rooms was not consistent and in places, some of the dance was not even captured at all. From the comments in the survey, DM2 believed that the, *equity of presentation/video/sound quality* were considered as the worst things about the marking using the DAapp. Thus, the reliability of the DAapp in the given context is challenged. Reliability is related to the consistency of assessment results and the degree to which student results remain consistent across replications of assessment procedures (Nitko & Brookhart, 2011). Thus, if the application of the assessment instrument is not administered consistently, scores between methods of marking are likely to be inconsistent and affect the reliability of the scores.

Reliability - Digitally Captured Performance Omission

No marks were allocated for the set solo from DM1 for Student K. This is probably because some of the dance was out of frame and the marker raised concerns around equity and fairness by deciding not to mark the performance. These are the comments left in the comments box within the marking application by DM1.

Obviously, no one operating camera during set solo for this dancer as much of the second half of the solo is out of frame. No consistency in the video presentation of each dancer, conditions also change from room to room and performance section.

DM2, who also marked this particular solo digitally, commented that *a brief section was out of frame* and awarded the student full marks for the performance, consistent with the two live markers and the moderated score. DM1 during their interview discussed the levels of unfairness exhibited during the performance examinations:

DM1: There's a fundamental unfairness about online marking for performance, even in terms of moderation because, even though your selection group was from the same school, they were in two different studios, the lighting conditions were different, none of the performances were taken from the position of them marking. In one

of the videos, the tripod was right over, it was like that (gestures an obstruction), so the conditions for the kids were different.

M: Yep.

DM1: In a few of the videos, there was a teacher present at that time, and they followed the dancer.

M: Okay, yeah.

DM1: That was twice. There were other dancers, there were about 4 or 5 of the students who didn't get the whole dance in.

Differences between the rooms could be easily overcome by ensuring equity in the rooms for the assessment and training of the technicians to ensure each operator captures each performance consistently. Despite this being addressed prior to the examinations taking place, both time and resources were limited, therefore, more experience and practice in this field would be needed to ensure equity and fairness is maintained for each performance and candidate. Nonetheless, in this instance there were occasions where the digitally captured performance clearly affected the markers' ability to be able to score fairly and similarly. Equity between the room set up and consistency between technicians capturing the performance digitally, would increase the capacity for markers to score fairly (Stiggins, 1987). Although concerns are raised regarding the digital capture of the performance and ensuring equity, what also became apparent was the repeated reference from live markers also missing parts of a performance.

Reliability - Live Performance Omission

The performance examination is one which is assessed and critiqued, where marks are awarded and taken away based on what was seen in the ephemeral piece. If parts of a performance are not seen, issues of fairness and reliability in scoring are apparent (Fitzpatrick & Morrison, 1971). The majority of the stakeholders in this investigation who were the experienced, teachers, examiners and curriculum specialists acknowledged, as discussed and analysed in chapter 4, that markers often miss parts of

the ephemeral, live performance. Below is an excerpt from the interview with digital examiner DM1, who also revealed that markers during live examinations are often debating marks and understanding the complexity of artistic performances and how to award the marks, when they simply did not see what the other examiner saw.

DM1: You sit there, and they say: “they didn’t do retrograde” and you say: “yeah, they did”.

M: Yeah.

DM1: Or “they didn’t do accumulation” [but] they did!

This may be due to markers looking down and missing parts of the performance or it may be because they have a different interpretation of the movement’s intent. Not many markers gave consistent feedback in every box against every performance therefore, substantial scrutiny and comparisons of comments could not be conducted from within the application. However, what it does highlight is that the application of the assessment criteria can often be difficult to apply. Examiners are faced with watching, writing notes, awarding scores against a marking key and moderating with a partner during a live performance examination. Here is where the digitally facilitated performance exam may alleviate this problem, providing all parts of the performance are captured. Interestingly, the markers also offered their insight about the usability of the DAapp with regards to parts of a performance being missed and the timeframes given.

Usability

Markers LM5 and LM6 partnered for half the examination day in room 2 with LM4 who examined there the entire day. Below is an excerpt from a discussion with LM4 after using the application in the live examination, reporting that aside from the difficulty of inputting the data within the allocated time, it was easy to use.

Time Management Issues

LM4: We just found that in the time that we had to complete it, coz the time for the exam is quite tight, at the moment doing both the

hard copy and the digital, was just tricky to fit in, in the time. We were ok with doing the data entry, but because you can't do the moderating until the end, you're usually running really short and backed up against marking.

M: So, you're okay with marking it using the app, it was then having to moderate it afterwards when you found there was a time constraint?

LM4: Yes, which we made sure we very quickly moderated on the paper.

M: On the hard copy?

LM4: So, it is recorded. The other thing with notes, it's just a lot easier to scribble down notes while you're viewing as oppose to typing them into a digital...

M: Do you think if you didn't have the hard copies there, you would be able to type it there?

LM4: I'm quite slow at typing so I would find that difficult to get down notes in the time that you're watching, because as soon as it finishes, you're kind of moving onto the next thing, and so you forget, if I had to wait until the 7 minutes, where I had time to work on their improvisation, I would probably have forgotten a lot of them, the notes that I wanted to get down on that one.

M: Yeah, okay. So, you're a scribbler? You like to write?

LM4: Yeah, which I could transfer in, but it's just a time thing.

M: Okay, is there anything else you'd like to say?

LM4: The system's really easy to use in terms of input, yeah, that wasn't a problem.

LM4 believed that it was easier to write notes whilst watching a performance because there was not enough time to type as well. Unfortunately, this marker did not

use the seven-minute timeframe to re-watch any of the performances. LM4 opted to remain using pen and paper to write down the notes during the ephemeral performance and the seven minutes was used to select the improvisation tasks.

The structure of the exam was matched exactly to that of the actual WACE/ATAR exam where the markers role would have been to input their data during the live examinations for their individual score, followed directly by their moderated score with their marking/examining partner within the specified timeframe (which is 30 minutes) and have a paper copy of their scores and notes. When the data was transferred from FileMaker Pro to Excel for analysis, LM4's marks were not recorded into the application and the moderated scores which were recorded on paper were entered at a later date by a technician. This could also indicate for LM4, that they just needed more time and practice with implementing the use of the DAapp when marking or that they were not comfortable with their marks being digitally recorded and analysed, thus just completing a hard copy of their results retained by the school. LM5 and LM6 (who partnered with LM4 respectively throughout the day) both managed to enter their pre moderated scores into the database during the live examination.

In contrast to LM4, markers LM1 and LM3 in room 1 commented positively on the ability of the DAapp to enhance the quality of their feedback to students, as further discussed below.

Quality Feedback

LM1 found that they were assisted with their dyslexia through the application of marking with the DAapp. They were able to view more of the performance because they could touch type and not miss parts of the dance. Thus, they could give better feedback to the students. Being able to type freely within the app without limitation or restriction was also deemed beneficial for live marker LM3 Lena, their classroom teacher, thus she could also provide better feedback to her students. Below is an excerpt from the feedback:

LM1: I found I was more inclined to give more feedback to the students because I could touch type and keep my eye on what was

going on and just glance down and watch and give more feedback, as opposed to putting my head down and writing. I'm also very dyslexic so I found that being able to touch type really helped, I didn't waste time with spelling. It kind of auto corrected it and that was really helpful for me.

LENA (LM3): And another thing I find with the marking keys, you only have this much (reference to small comments box on paper marking key) room to give feedback.

M: Yep.

LENA: And so usually my poor kids, I'm going around and around, and it's all higgledy piggledy and it's hard for them to read. Whereas having this [DA]app you can, you've got space, to give feedback.

Having an opportunity to effectively engage with the feedback from the perspective of the students through the application of the DAapp will be further discussed in the next chapter.

These comments from the markers in both examination rooms provide contrasting opinions regarding the effectiveness around the application of the DAapp in supporting the practical dance assessment. However, there appear to be tangible benefits in using the DAapp to touch type and not miss parts of a performance and also provide more viable feedback. In addition, DM1 commented in the survey feedback that by using the DAapp it helped them to do their best quality of work because *the time between students was less compressed and stressful*.

However, more time and training with the application would be needed for all markers to be able to effectively input their scores and comments within the given timeframe. The method of using the DAapp as a reflective tool in supporting both formative and summative assessments will be discussed in greater detail in chapter 7.

The next results displayed in Figure 5.4 below are the results for Performance 2, the Set Solo, in exam room 2.

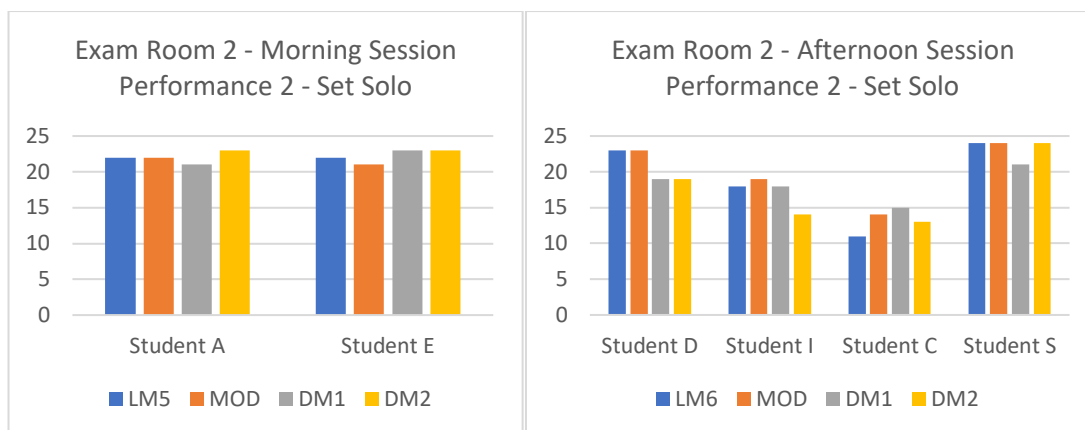


Figure 5.4 Performance 2 Scores in Exam Room 2

Consistency and Variance Between Methods and Marker Scores

For the candidates in exam room 2, the digital and live markers had consistent scores for students A and E. For student D, the difference at each criterion between both live and digital markers was only one mark, however, overall, there was greater variance, suggesting that a shared understanding and application of the marking key was not consistently applied or that subjectivity within the performance may have been apparent. There was also consistency in scoring between digital markers for students A, E, D, C and S and inconsistencies for student I. For student I, the difference at each criterion was only one mark either way yet overall, there was a greater variance, thus, out of tolerance (an accepted level of difference in scores). Live Marker LM6 also scored consistently with digital marker DM1 for student I. For student C, the digital markers DM1 and DM2 were also closer to the school moderated score than live marker LM6. These slight variances indicate that it was possibly due to the application of the marking key or the video quality affecting scoring. These anomalies could be rectified if all teachers and markers of the school-based assessments were given the same training and exposure to the shared understanding of the assessments as the actual ATAR Dance markers and each performance was captured consistently.

The difference in scores as discussed was in part due to the equity of the video in capturing the performances. The results clearly demonstrate some consistency and some inconsistency with interpretations provided for their causes. Further analysis and interpretation of the discrepancy of results centres around the digital representation of the dance performance for assessment and the use of the analytic marking key. Overall,

the patterns for scoring performances 1 and 2 suggest that the DAapp was able to generate repeatable and accurate measures between examination contexts, with explanations as to how the problems in variance may be overcome. However, what came up as problematic for participants was the digital representation of the dance performance.

Representation of Dance Performance and Authenticity

The digital representation of the dance performance was reported as unsatisfactory by markers and some students. This was largely because the digital representation was not deemed adequate in depicting small movements and performance qualities - arguably more prevalent during a live performance. As part of the survey, the digital markers were asked to comment on what they thought were the negative aspects of the DAapp. DM2 stated, *Not being able to see the students faces or expressions and difficulty in seeing the very tiny movements, that sometimes can be a central motif and video flattens the dynamics of live performance.* For DM1, they claimed, *Live performance is the purpose of assessment. Video a poor substitute for live performance.* DM1 also stated during their interview:

DM1: Because we perform, performance quality, when you are watching somebody, what takes away from the video is a certain kind of energy, a certain dynamic, an aliveness that's in there.

M: It (the video) kind of flattens it?

DM1: Yes flattens, except for the, exceptional performer. For the weaker performer, it actually amplifies the lack of dynamics, and there are some kids who are, just, you're marking their confidence, are they confident, and you're going, "well this kid of course isn't confident, but it's exaggerated by the flattening aspect".

The reference to the flattening aspect and performance/dynamic quality lost through filming, is in direct relationship to the findings of the preliminary interviews with some of the key stakeholders (teachers, markers and curriculum specialists of the dance course) who believed the digital representation of dance performance was not

authentic. Arguably, certain aspects of a live performance can also be missed depending on the location of the audience and where the performer is facing.

Although the examiner was talking about the video in an examination context, the students who got to use the DAapp formatively also came across a similar problem when asked to look back over their work and see how the marks were awarded and how this could support their future performances. Student K provided the following account:

What it doesn't do, is when we were marking ourselves, by watching the video, it asks us like, your engagement with the audience and the way you present it, and stuff like that, you can't really see that in the film because number 1, it was so like far back and number 2, film just doesn't pick up on like, I don't know, like the emotional.

Student H also echoed the same notion:

That's what I found as well, because sometimes I get told that I do retarded faces during my dance, like I stick my tongue out and like, bite my lip and stuff, but I wasn't really able to see it in the video, so it was kind of hard.

M: Is that what you were looking for? (we all laugh)

Student H: It's always written down in my notes and stuff and I'm like, I didn't even know I did that.

M: Did you put the video onto the big screen?

Student H: Oh no.

Student K: I didn't even realise you could do that.

Students K and H were somewhat dissatisfied with the digital representation of their work because the performance quality and dynamic and small movements were lost. In addition, Student H revealed they had a lack of awareness in how they used their body in the space and were keen to see how the feedback from the teachers could be supported by the video. Unfortunately, in this instance it did not happen. This was

possibly because they did not enlarge their performances to the full screen, therefore their ability to see the finer details would have been significantly decreased. This was unfortunate because the feature to enlarge the screen was an option. More teaching and learning time with the DAapp was needed for more insight to be gained and to see if those problems could be resolved.

Despite some participants not liking the digital representation of the dance performance, comparable and accurate scores between both live and digital markers were often achieved, thus indicating that the reliability across scores was achievable through digital representation, which was also found with other studies incorporating practical and creative tasks (Nastiti, 2018; Newhouse, 2012a; Williams & Newhouse, 2013).

The shared value amongst these dance educators for a live performance in preference to a recorded performance is a notion which is steeped in around the longstanding debate regarding the capture of live performance and one which appears to be maintained. Despite this, the current and rapid uptake of mobile technology in culture and learning environments across various institutions across the globe is significantly increasing (Li et al., 2018), which I believe will challenge and shape future discourse.

Analytic Marking Issues

The next consideration around the possible difference in scores was the use of the analytic marking key. DM1 suggested that despite being an experienced marker, their understanding and other markers known to them, have difficulties in understanding how to interpret and apply the analytic marking key with regards to the performance during the school-based assessments:

DM1: I think the marking keys need to be, like there's a really big discrepancy for me between, they have technical skills and then they talk about alignment.

DM1 reveals above that they have difficulty differentiating between technical skills and alignment skills being awarded under different criteria, and thus how to award the

marks accordingly. They go onto identify another grey area when using the analytic marking rubric and the interpretation of language regarding the word presentation as it relates to the performance:

DM1: But then there's presentation, I think there's, oh, I wish I had the marking key in front of me, I think there's also, within the solo, about their presentation, and so they can get.

R: Like their performance?

DM1: Presentation. Yeah, because it's like, whether or not they look.

R: They look good?

M: Ah okay, so you interpret presentation as (realisation of misinterpretation).

DM1: Well, a lot of people do.

M: Ah, I see what you mean.

DM1: Bra's showing, hair lackies (hair ties/ribbons), toenails painted.

M: Their presentation, I believe, is their performance engagement, confidence and focus.

The misunderstanding around the use of language and terminology and application of teachers/markers scores awarded within the analytic marking key may not always change the score awarded, but the levels of fairness and reliability of the scores with the school-based assessments are significantly impacted if teachers and markers are awarding and subtracting marks under the same criteria but for completely different reasons (Linn et al., 1991). It is not fair for the students if some are being marked on how neat and tidy, they look, and others are being marked on their actual performance skills under the same descriptor. Inconsistent use of the rubrics lower the reliability of the scoring process (Nitko & Brookhart, 2011). Issues with the marking key also became more prevalent when analysing the scores obtained for performance 3 and the Interview, some of which I now discuss.

Figure 5.5 below displays the results for Performance 3, the structured Improvisation for exam room 1.

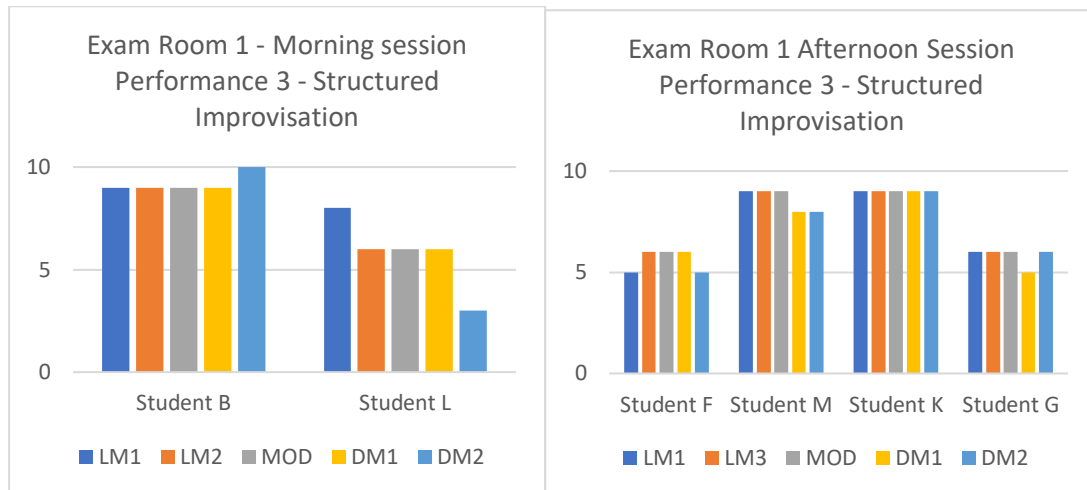


Figure 5.5 Performance 3 Scores Exam Room 1

All markers for students in Room 1 for Performance 3, the Structured Improvisation consistently scored within two marks of the moderated school mark. For Student L there was an exception, where digital marker DM2 scored three marks and live marker LM1 scored eight marks, a difference of five. These anomalies in scores were due to the application of the marking key, where the large difference in scores came from the markers application within the different marking descriptors, where there was more than one mark available for each marking descriptor. Figure 5.6 below is the analytic marking key (with marking descriptors) used for Performance 3, the Structured Improvisation (School Curriculum and Standards Authority, 2015). As can be seen, the descriptors for criterion 1 are largely open to interpretation and therefore susceptible to subjectivity in marking.

Performance 3: Structured improvisation		10% (10 marks)
Description	Marks	
Criterion 1: Ideas and movement choices in responding to task (exploration of movement, intent, sequencing of movement and decision-making process, compositional tools, clear structure)		
Successfully completes the task. A clear trajectory (structure), decision-making process and development of ideas relating to concept from start to end. Uses choreographic devices and contributes a personal and imaginative exploration of movement and response.	5-6	
Adequately completes the task. A competent use of choreographic tools and logical structure. Rearranges known movement relevant to the set task. Movement choices reflect an understanding of the concept of the task	3-4	
A limited and or partial attempt at completing the task. A limited use of choreographic tools and structure. Rearranges known movement without expanding movement potential.	1-2	
Makes no attempt to respond to the task and/or does not meet the minimum time requirements.	0	
	Total	6
Criterion 2: Confidence, commitment and creativity in performance		
Presents an engaging performance with confidence and commitment.	4	
Presents a confident and committed performance.	3	
Presents a mostly confident performance.	2	
Presents a performance that lacks confidence.	1	
Makes an inadequate attempt at the task.	0	
	Total	4

Figure 5.6 Analytic Marking Key for Performance 3

For example, how is a marker to decide what the difference between a score of 5 or a score of 6 is for contributing a personal and imaginative exploration of movement and response. This is particularly problematic because of the subjectivity that goes alongside marking artistic work and markers own personal understanding of imaginative exploration. Also, if a student adequately completes the task, when do you award either three or four marks and what are the deciding factors? Accuracy in scores and reliability of marking is reduced when the criterion measures lack clarity and possibly do not sufficiently support the validity of the test (Kane, 2010; Nitko & Brookhart, 2011)

Figure 5.7 below shows the results for Performance 3, the Structured Improvisation in exam room 2.

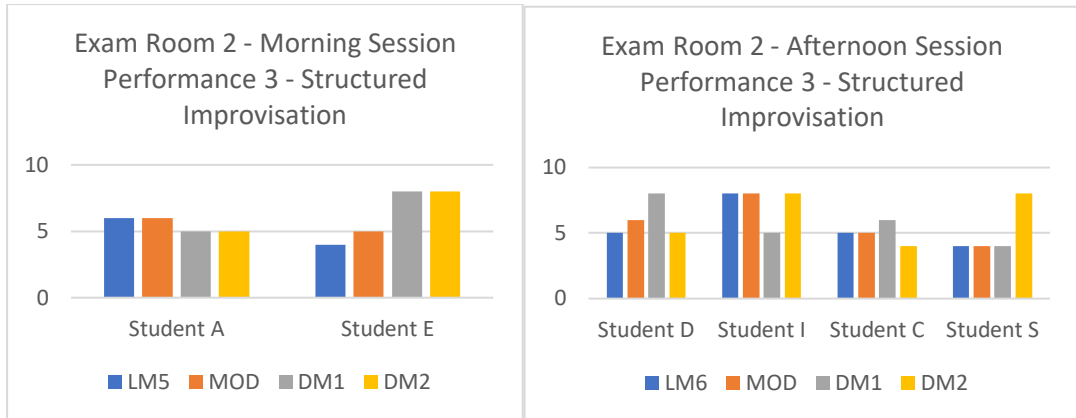


Figure 5.7 Performance 3 Scores in Exam Room 2

For Performance 3 in exam room 2, markers had consistent scores for students A and C. There was also consistency in scoring for the digital markers for student E. However, for students D, I, and S, the digital markers were inconsistent with each other and/or the moderated score. For example, DM1 scored Student I, five marks and all other markers awarded eight marks alongside the school moderated mark. Student E was awarded eight marks by both digital markers, whereas the live examiner LM5 only awarded four marks and the school moderated mark was five. There was possibly a different application and understanding of how to use the marking key despite a common agreement amongst markers already decided. This is because there was greater variance in applying criterion 1 for Performance 3 (see Figure 5.6). This may also be because of the subjectivity of marking artistic work, a problem with the task or missed parts of a performance by the markers (Nitko & Brookhart, 2011; Thorndike, 1971).

Figure 5.8 displays the results of the interview component of the examination.

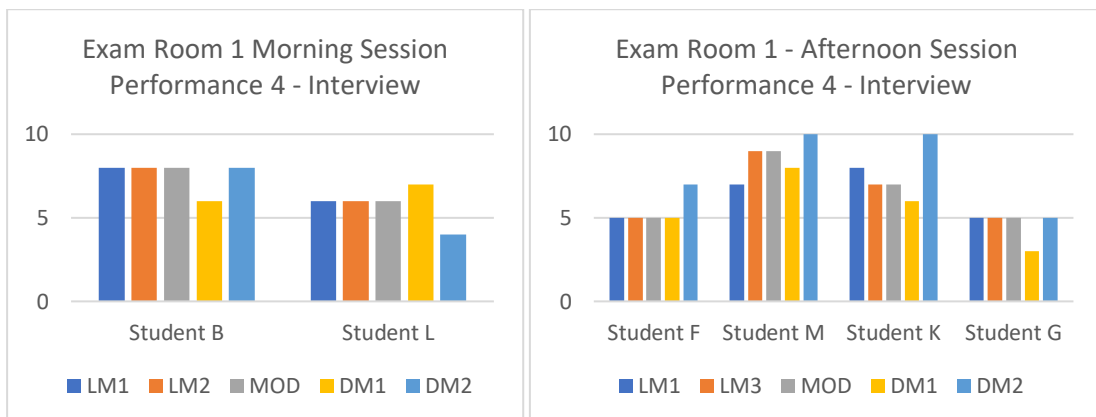


Figure 5.8 Interview Scores in Exam Room 1

The scores displayed show that there are again varied scores in this section of the examination between the live and digital markers and the digital markers, particularly for students M and K. DM2 had trouble hearing the interview for Student L, commenting within the application that it was, *difficult to hear speaking due to the crackling in the sound*. Alongside possible issues with the criterion measures (such as two marks being available for one performance descriptor) an inability to hear the response properly may also be why they marked lower than the other markers.

Figure 5.9 below displays the results for the Interview section of the examination for students in exam room 2.

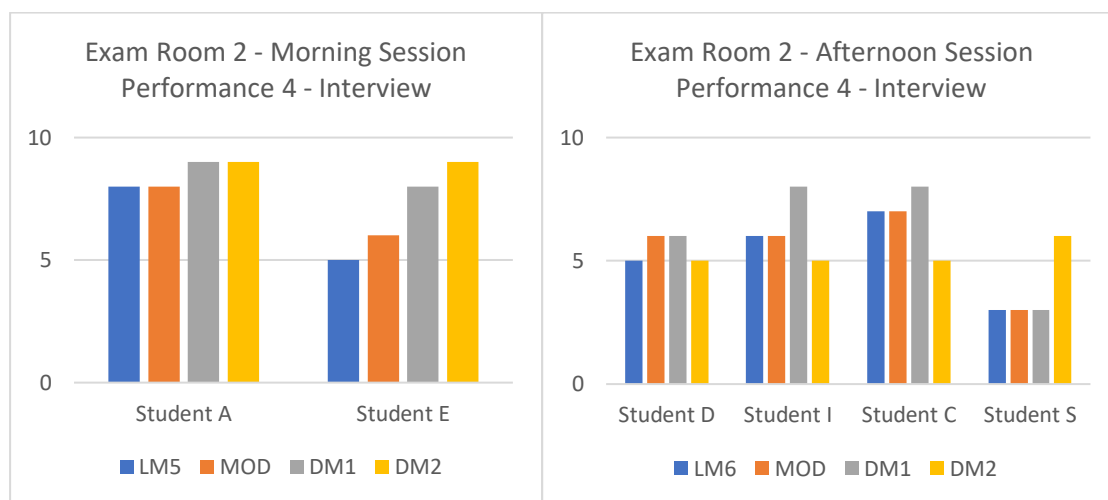


Figure 5.9 Interview Scores in Exam Room 2 In exam room 2, DM2 and DM1 were three marks apart for students I and C, but within two marks of the moderated school mark. DM2 awarded student S six marks, whereas DM1 and LM6 awarded three marks, the same as the school-moderated mark. Student E scored nine and eight from the two digital markers respectively and five from LM5, with a school-moderated mark of six and a range of four marks. Figure 5.10 below is the analytic marking key used for scoring the Interview (School Curriculum and Standards Authority, 2015) .

Interview		5% (10 marks)
Description	Marks	
Criterion 1: Response		
Critically, and with some insight, analyses characteristics and personal qualities of own dance and processes relevant to the questions.	5-6	
Describes, with some analysis, characteristics and qualities of own dance and processes relevant to the questions.	3-4	
Briefly and/or generally describes own dance processes relevant to the questions.	1-2	
Very briefly talks about own dance and/or processes.	0	
	Total	6
Criterion 2: Dance terminology and language		
Effectively uses a range of appropriate dance terminology and language in responses.	4	
Uses a range of appropriate dance terminology and language in responses.	3	
Uses some appropriate dance terminology and language in responses.	2	
Limited use of dance appropriate terminology and language in responses.	1	
No use of dance terminology and language in response.	0	
	Total	4

Figure 5.10 Analytic Marking Key and Criteria Descriptors for the Interview

Again, with this section of the analytic marking rubric, there are two marks available per descriptor for criterion one. What the students are trying to demonstrate in the interview do not relate well to the scoring criteria. Scores of complex creative and practical tasks require the depiction of student creativity, high order thinking and innovation. This rubric groups and flattens the components of the task into a score where the task is poorly evaluated against the criterion measures, (Fitzpatrick & Morrison, 1971; Kane, 2001; Messick, 1989). For example, for Performance 4, the Interview - the collective score for 2 or 3 questions of completely different content and context, has to be made. To compound this issue there are two marks available to be awarded at each descriptor, thus, a possible 4 marks range for only two criterion descriptors. For Performances 1 and 2 (the Original Solo Composition and the Set Solo), there was only one-mark differential between each performance descriptor, making it easier for an overall agreement to be reached with less room for interpretation of how to apply the scores (see Appendix D).

The consistencies and inconsistencies in marking the interview indicate that at times the technology and sound may have been affecting the reliability of the scores,

however, for both Performance 3 and the Interview, the markers were at times awarding a three or four, mark variance in scores, where only one criterion descriptor separated the scores, thus they used the marking keys differently. For this to be resolved, modifications to the marking key would need to be implemented to ensure reliability and validity in the marks (Miller & Linn, 2000) (which I have since made recommendations for as part of the examining panel for ATAR Dance in subsequent years). There needed to be only one mark available per criterion descriptor and thus be in alignment with the other two parts of the exam and recommended application of educational measurement for analytic marking (Nitko & Brookhart, 2011) and as recommended during examiner training, which I have experienced multiple times.

Issues of Subjectivity and Interpretation with Analytic Marking

Interviews with the experienced teachers and markers both pre and post assessment reveal that markers subjectivity and interpretation as to how they apply the criteria of the marking keys is something which can impact on the variance and application of scores and ultimately on the fairness and validity of the marks (Dorn et al., 2004). Also highlighted was the same notion with curriculum expert and senior marker Alex, revealing that there are often anomalies between school-based marking and final ATAR scoring which are then combined to give a total exam score. Thus, what the method and process of using the DAapp has done is highlight how this notion is significant within schools and that extra training and a shared understanding of what the standards of the assessment are and how to apply them is an area requiring significant attention. If final exam scores by trained markers and examiners are combined with scores by classroom teachers, many of whom are not trained markers or examiners, more stringent measures to support summative assessment is not only possible, but necessary. The technology is there as a proven strategy, the implementation is lagging behind. Education has largely accepted the use of the analytic marking system (Madaus & O'Dwyer, 1999) however, there are indicators particularly regarding the dance performance for assessment that an alternate judging system supported through the use of technology may be fairer and more reliable.

Nonetheless, further analysis of this is not required because although the marking keys and tasks clearly impact upon the variance in scores and reliability of the marking keys to support the validity of the test (Messick, 1994; Nitko & Brookhart, 2011), it was not the focus of this study in particular, nor are there enough participants to complete the depth of statistical measures to validate any claim (Cohen et al., 2011). However, a discussion of what the students are trying to demonstrate and how this affects their scores will be discussed in more detail in the next chapter.

Although there are a number of instances where there are consistencies in both live pairings of markers, digital pairings of markers and between both live and digital markers, the DAapp in this instance does not solve the problem of marker variance. Other research (Williams & Newhouse, 2013) found that there were also differences in the traditional way of marking compared to the digital marking but between the digital markers there were consistencies.

Marking Timeframes

The DAapp scoring feature was equipped with a time stamp which provided the researcher with the times of entry for each candidate and for each section of the examination and the time the moderated school marks were entered by the paired markers. This timestamp was apparent for both live and digital markers. Although the live markers were bound by entering their marks within thirty minutes (length of exam plus 5 minutes) the digital markers who did not mark the live performances (only the recorded examinations) were not bound by the thirty-minute restriction. The digital markers consistently marked within the suggested thirty-minute timeframe and frequently took less time to mark the entire exam, sometimes as little as fifteen-minutes. This was probably due to the fact that they did not have the seven-minute preparation for the structured improvisation to sit through which happens in a live examination.

The live marker pairs in exam room 1 yielded consistently similar scores. LM1, LM2 and LM3 were more experienced markers, had worked together many times before and therefore possibly had a clearer understanding of the marking key compared to the other live and digital markers, however on occasion, the entering of their individual

marks online was completed after their moderated score, thus, the original scores and possible variance may not be apparent. These findings suggest that the use of the DAapp could be used to reduce marking times and give an accurate representation of live markers scores before moderating marks.

Technical Limitations

The quality of administration due to time limitations unfortunately impacted the collection of complete data sets. Some of the students' performances were not captured in the examination rooms; this was largely due to the technicians not being experienced in the order and timing of each section of the examination, thus at times being too rushed to capture each performance whilst trying to operate the equipment and ensure the application, maintained functionality for all examinations taking place with all markers involved. Additional training for the technical administrators is something which requires further development for future implementation. Issues will probably always be present in the execution of exams, with the DAapp being just an extension of the exam environment. However, the problems encountered with the DAapp are things which can be easily fixed with more time, resources and stringent practices. Nonetheless, it is also likely that no matter what the training, there may be issues from time to time (hence the reluctance for ATAR Dance to move to a digital platform initially). The question that remains, is whether the issues can be reduced somewhat, are within tolerable limits, and whether the impacts are fair and just for students.

Summary

The DAapp was found to be a reliable marking instrument, as the scores and rankings for Performance 1 and Performance 2 were consistent across both assessment methods (live and digital) and all markers. Nonetheless, there were some limitations to the digitally enhanced assessments. The marking keys were sometimes used differently, by giving different scores within the same descriptor, which in turn did not support the validity of scoring (Kane, 2001; Miller & Linn, 2000). The digital markers were less consistent with their scores for performances 3 and 4 (the Structured Improvisation and the Interview) compared to the live markers. However, there was still some inconsistencies in scoring for the live markers too. In addition, there was a requirement

for more training and exposure to the new method and associated developed resource particularly regarding the technicians operating the system and capturing of the performances.

The method employed to use the DAapp has proved to play an important role in capturing an ephemeral performance to justify and save what marks were awarded, enabling markers and students the opportunity to re-watch a performance, and potentially holding markers and their marking more accountable. The use of the DAapp gave schools an enduring record of achievement, thus also supporting standards and future training and moderation processes. The DAapp automatically totalled scores for the examiners. In the usual school-based assessments, markers would still be required to add up scores, write names or student numbers, write comments and feedback either separate to the video or live and input marks into a separate spreadsheet. These are all time-consuming tasks which detract from the actual professional work required, thus the application of the DAapp alleviated many of these paper-based and time-consuming activities.

The usual model of assessment is bound by historical and hierarchical assessment guidelines, which I am aware are not easily changed. Changing completely the summative model of assessment may not be necessary or even possible, however, implementing strategies to support the students, teachers, markers and teachers in training is something which could be easily enhanced through the methods used with the DAapp.

Without the rigour of summative assessment dance education and assessment may become less effective (Lentillion-Kaestner, 2020) as found with the Swedish study where the State of Geneva was found to have a more successful assessment of PE and Dance because it was informed by a summative assessment, whereas the state of Vaud was deemed less effective as there was no final evaluation and students ongoing assessment was deemed poor (Lentillion-Kaestner, 2020). The reviewed literature suggests that ongoing assessment in the arts is more in line with arts practice and the desire of arts educators (Phillips et al., 2009; Stinson, 2016b; Warburton, 2004, 2006). Some other countries use technology and video evidence as viable forms of external

assessment in conjunction with school-based assessments and moderation processes. Moreover, the current pandemic has brought about further modifications to the GCSE dance performance through ongoing digitisation and capture of choreography for assessment (OfQual, 2020).

The DAapp system can support different forms of assessment both for and of learning, thus aligning process and product or more aptly, formative and summative assessment. Some insight into the ways the DAapp system could assist in the current form of assessment have been highlighted. Further insights on the strengths and limitations to digitally enhancing the assessment of dance will be discussed in further detail in the next chapter when considering further explorations and participant experience in implementing the use of the DAapp to support dance assessment.

Chapter 6: Participant Responses to Digitally Enhanced Dance Assessment Using the DAapp

This chapter presents the findings from the innovative method of dance assessment using the DAapp which integrated live marking, videoed performances, the marking keys and the scores awarded by the markers (see Figures 3.3 - 3.16). Thereafter, students could view their own performances alongside the marking keys and markers' feedback. The alternate interview task required students to respond to interview questions via the DAapp and other recommended self- and peer-feedback activities were all contained within the one application - see Figures 6.1, 6.2 and 6.3 respectively.

The screenshot displays the DAapp interface for a student's performance. At the top, a progress bar shows a total mark of 38 (P1: 11, P2: 17, P3: 5, P4: 5). The interface is divided into sections for different criteria:

- Performance 1:** Original solo composition - marked out of 13 marks and converted to 35% (mark 11/13).
- Criterion 1: Choreographic intent mark 2/2**
 - Solo has not shown any relevance to the stated choreographic intent.
 - Solo or (part thereof) displays intermittent connection to the stated choreographic intent.
 - Solo or (part thereof) displays a clear connection to the stated choreographic intent.
- Criterion 2: Organising the dance structure mark 4/5** (sequencing, transition, repetition, variation and contrast, unity - manipulation of the elements of dance (BEST) as they relate to dance composition)
 - Solo is ineffective. Inadequate use of BEST.
 - There is a basic structure to the solo with ineffective use of BEST.
 - Sequencing of movement is simple and predictable. Movement choices are mostly from a known source. Demonstrates limited and/or ineffective manipulation of the elements of dance (use of BEST).
 - Sequencing of movement is simple and predictable. Movement choices are from a known source. Demonstrates adequate and/or predictable manipulation of the elements of dance (use of BEST).
 - Solo demonstrates unity of structure. Sequencing of movement and use of space may sometimes be predictable. Demonstrates competent manipulation of the elements of dance (use of BEST).
 - Solo demonstrates unity of structure through skilled sequencing of movement. Uses a skilled selection and manipulation of the elements of dance (use of BEST) throughout most of the solo.
- Criterion 3: Presentation mark 3/4** (confidence, engagement, projection, focus, commitment)
 - No attempt at presentation.
 - Performance presented lacks confidence. Limited commitment and focus throughout solo.
 - Some of the performance presented lacks confidence, focus and commitment to the movement.
 - Performance presented is mostly confident. Commitment to the movement and focus are sometimes inconsistent.
 - Performance presented is confident, committed and focused. Performance mostly engages the viewer.
- Criterion 5: Safe dance practices and alignment mark 2/2**
 - Solo performed without regard to safe dance practices. Limited or no alignment principles demonstrated.
 - Mostly applies safe dance practices. Demonstrates some use of alignment principles.
 - Consistently applies safe dance practices. Generally demonstrates good use of alignment principles.

Comment: Electronics- a very clear solo with strong and clear investigation into new movement patterns and pathways. Good work. Keep refining your moving and perhaps working on performance skills.

Performance Space Diagram: A 10 m x 8 m (approximately) rectangle marked on floor. A 2 m distance is indicated between the space and a row of chairs. A 'Play Video' button is visible.

Video Player: Includes 'Play Video' and 'Play Enlarge Video' buttons.

Handwritten Note: My original solo composition, focuses the scattered movements of electronics, in response to the music as a stimuli. The choreography of my solo including the spatial pathways. Shows a contrast between linear and angular lines circular and curved systems. This is to portray a contrast between the physical appearance of our bodies and the configurations and circuits that form them.

Figure 6.1 Student able to view own performances alongside feedback and marking key

Close Student Name re-login

TASK 2
Perform an improvisation in Ternary Form, i.e three contrasting sections A and B and A.
Select two contrasting phrases from the Set Solo. Use these phrases to devise three contrasting sections.
In each section manipulate the choreography of the set solo.

In Section A
(i) use different aspects of body and space.
Transference of weight Low levels

In Section B
– use different aspects of energy.
Percussive movement dynamics

In Section A
(ii) repeat the structure and intent of A
(i) but explore a contrasting level.
Use a slow motion movement as the transition between A and B and A.

Hi Student A
You have 4 minutes to record your responses to the following questions.

Interview Question 1
Q1 b) Discuss your use of space/levels/dynamics in your structured improvisation.

Interview Question 2
Q2 b) Describe the process you went through in exploring the choreographic intent of your original solo composition.

Performance space
10 m x 8 m (approximately)
rectangle,
marked on floor

2 m distance

You have 4 minutes to record your responses to the following questions.

Q1 b) Discuss your use of space/levels/dynamics in your structured improvisation.

Record your response here

Q2 b) Describe the process you went through in exploring the choreographic intent of your original solo composition.

Record your response here

Figure 6.2 Alternate Interview Task for Students

Close Close web page 11.01 re login

Welcome
1) Please watch your structured improvisation (Performance 3) and then complete the interview questions.

2a) Watch and assess your Original Solo Composition (OSC - Performance 1)
2b) Watch and assess your Set Solo (Performance 2)
2c) Watch and assess your Performance 3
2d) Listen and assess your Interview

3) Select a peer to assess. You will be able to watch their performances and mark / assess them using the marking key.

Watch Performance 3 & Complete Interview Questions

Assess All My Performances

Find a student assess

Peer Student First Name

Assess this student Performances

Figure 6.3 Possible Student Assessment Activities

An analysis of the strengths and limitations in using the DAapp to support the dance examination was carried out by identifying themes across the data set from surveys and interviews with the students, their classroom teacher and the digital markers. The surveys collected from the students, their classroom teacher and the digital markers also provided some descriptive and frequency statistics to be analysed in support of the qualitative data. The focus group and interviews with the students and teacher/markers helped to define the perceptions and experiences of using the DAapp and the possible ways it could assist in the practical dance assessment. The survey administered to the students, their classroom teacher and digital markers after their use of the DAapp and suggested activities, allowed for an understanding to be gained about their thoughts and feelings towards their experiences. Fourteen out of the total twenty students completed the survey. The remaining six were absent on the day of administration and despite further attempts for the surveys to be completed and collected, this did not happen. The results from this chapter therefore contribute to the answering of the following research questions:

What are the perceptions of the students', teachers, and markers of the digitally captured dance performance for assessment?

In what ways can digital technology be used to support the current form of assessment?

To be able to implement this new assessment methodology alongside the developed technology with the students and their teacher at the school, the school required a certain level of digital infrastructure.

School Infrastructure

Implementing the DAapp for student engagement proved to be somewhat problematic due to the infrastructure at the school. The students were unfortunately unable to locate the caching server as each student tried to obtain a copy of the web version of the application which the first person downloaded, rather than each individual student actually getting past the school server to gain access. This was a protocol put in place by the school designed for both student and data protection. This allowed the school to save internet band width by students saving locally on their school server. Unfortunately, this did not support this investigation and due to the band width

restrictions, the number of participants to be able to log in successfully and save their answers concurrently, were depleted. Consequently, some students' answers were not recorded because the site crashed, and their answers were deleted. Only 5 out of 20 students managed to save their written response to the alternate interview (see Figure 6.2) or for detailed explanation of the alternate interview (see Chapter 3). If this investigation was not limited to one student researcher completing a PhD with restricted resources and possible participants across a jurisdiction spanning 2.5 million km² (area of WA), a complete pre-test and trial with more schools involved would be needed. Due to the limited number of responses from participants, it was decided that the digital examiners would not mark this part of the examination (separately). Instead, they were just asked to comment on their perception of the alternate interview task and responses by the students whose written response was recorded.

There were both strengths and limitations discovered through implementing the new assessment method and associated DAapp as seen from the perspective and experiences from the students, their classroom teacher and the markers. First, I will highlight and discuss the strengths followed by the limitations.

Strengths

Despite the setback from the majority of answers not being saved to the alternate interview task, there were many perceived strengths to the implementation of the DAapp to support the current form of assessment. The majority of students were still able to participate in the alternate tasks and provide feedback on their experiences. Critical engagement and use of high order thinking skills were seen as some of the benefits when exploring the possible uses of the DAapp to support the current form of assessment, which I will now reveal.

Reflection, Critical Engagement and High Order Thinking

Being able to reason and justify choices and engage with tasks so that an evaluation can be made to inform a persuasive judgement or argument are central to critical thinking (Bowell & Kemp, 2015). These critical thinking tools are deemed necessary to effectively complete all components of the ATAR practical dance examination (see Table 1.1) and the marking of it. What became apparent when

analysing the data was the increased support provided by the DAapp and subsequent ability for participants to engage on a deeper level with their tasks, for them to be able to then justify their choices for their response to their given task(s). For the students, this was enabled as part of completing performance 3 (the structured improvisation) and the Interview, and also an opportunity to reflect on their work and gain a deeper awareness of their own actions in the space. For the teachers and markers, they were able to justify their marks and gain a deeper level of understanding of student achievement. The following discussion and data provide support for the perceptual benefits as seen from the students, their teacher and the digital markers.

The survey response from the students (detailed in Figure 6.4 below), are the response to question two regarding the alternate interview task (Performance 4) and the captured structured improvisation (Performance 3).

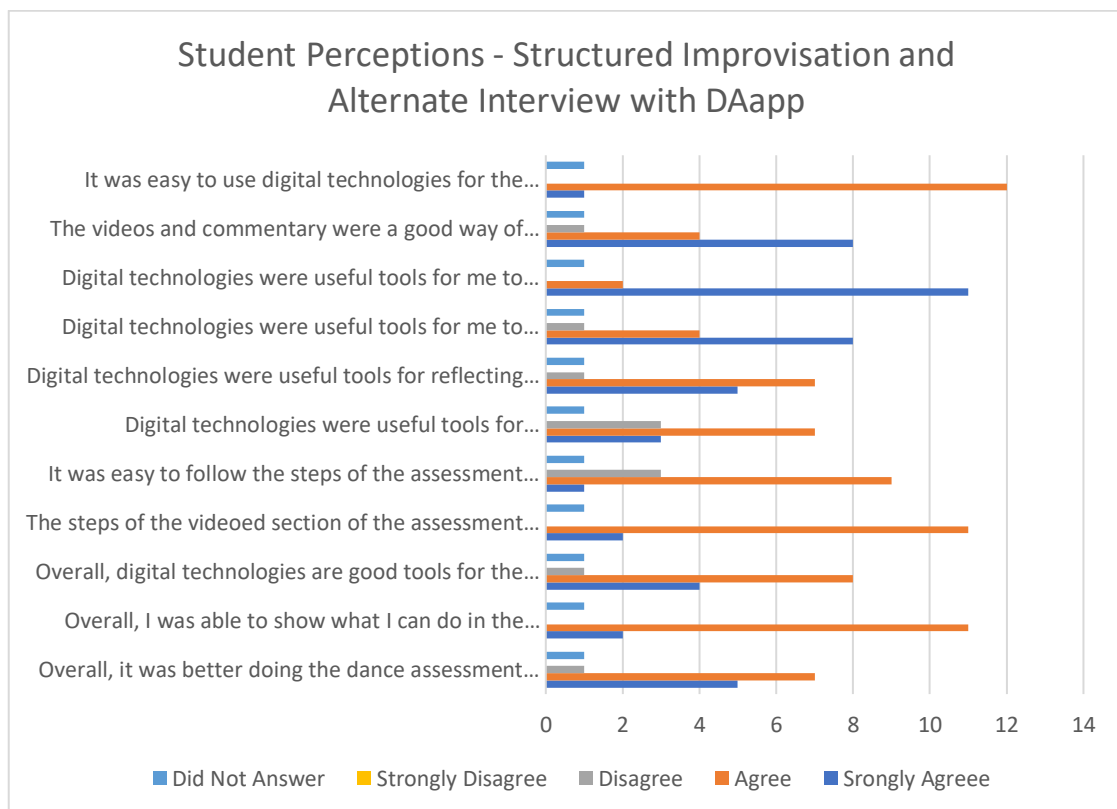


Figure 6.4 Student Perceptions of Performance 3 and the Alternative Interview

Alternate Interview and Structured Improvisation with the DAapp

The DAapp was considered easy to use by twelve out of fourteen students. Eight out of fourteen students strongly agreed and four out of fourteen agreed that the DAapp was a good way of showing their performance. Eleven out of fourteen students strongly agreed and two out of fourteen agreed the DAapp was good for reflecting on performances. Eight out of fourteen students strongly agreed and four out of fourteen agreed that the use of the DAapp was a useful tool for making improvements for their practical performance. Seven out of fourteen students agreed and five out of fourteen strongly agreed the DAapp was a useful tool to use to reflect on their progress. Seven out of fourteen agreed, three out of fourteen strongly agreed and three disagreed that the alternate task and associated DAapp were useful tools for explaining creative choices. Eight out of fourteen agreed and four out of fourteen strongly agreed the DAapp was a good tool for using during practical assessments. This is possibly because eight out of the fourteen strongly agreed and four out of fourteen agreed the video and commentary (writing) helped them to show their ability. For the students by and large, it was agreed that it was better doing the dance assessment task using the DAapp than being interviewed by an examining panel.

Overall, the surveys reveal that the alternate interview task was well received by students, with critical reflection being a key component, thus supporting future practice, progress and performance of the practical assessment. Generally, the data from the survey for question two for the students gave a very positive outcome and perception from participants for implementing the DAapp to support and enhance the usual form of the live dance performance examination.

Figure 6.5 shows the responses of the teacher and markers to question two of the survey asking about the alternate interview task and videoed Performance 3. The two digital markers and the teacher, Lena, agreed that the DAapp was easy to use, useful for reflecting on student progress and explaining creative choices. Lena strongly agreed that the video demonstrated students' ability and that the DAapp was a good instrument for supporting dance. She also strongly agreed that the video and commentary were good enhancements for Performance 3 and the interview. The digital

markers also agreed that the DAapp helped to show students' ability and was a beneficial addition to assessment. They agreed that the DAapp was useful for improving practical performances and considered the video and commentary particularly advantageous for Performance 3 and the interview. DM2 strongly agreed with Lena and DM1 that assessment with the DAapp was better than being interviewed by a panel of examiners.

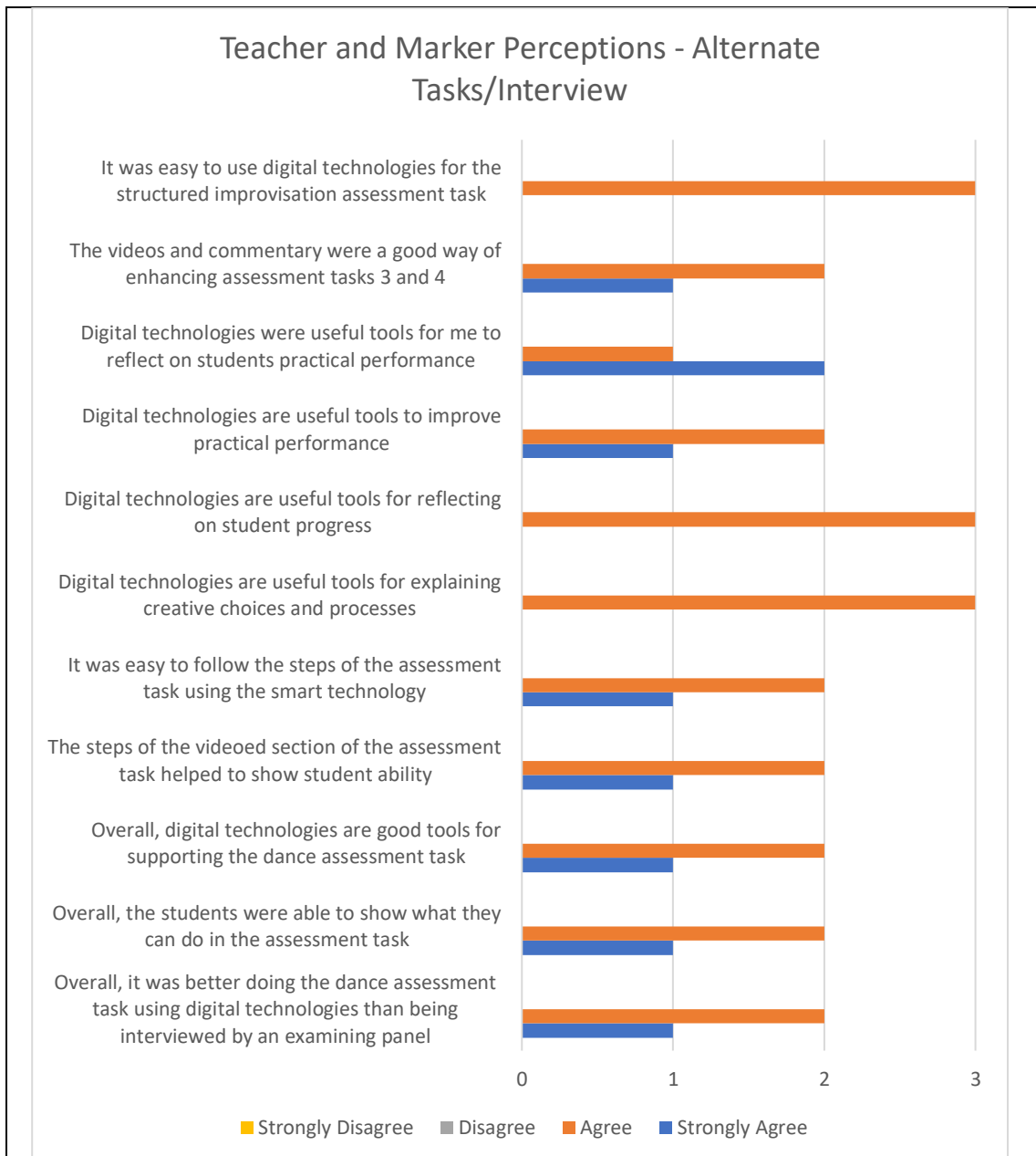


Figure 6.5 Teacher and Digital Marker Perceptions of Alternate Interview

The surveys showed that the alternate interview was well received by Lena and the digital examiners, particularly because critical reflection was a key component and

informed understanding of student achievement and progress. Responses to question 2 of the survey signalled a positive attitude towards implementing the DAapp to support and enhance the current process. The students who participated in the focus group went on to discuss reflecting on performances, which deepened engagement and understanding and informed future practice. The following excerpts illustrate:

M: How do you feel about the technology being used then, as part of an exam and then you being able to reflect back on what you've done?

Student K: Yeah, I liked being able to look at it.

M: You liked it?

Student K: Yeah, you can see like, even in the improvisation, you've got the two, like mine was in binary so, you had an A and B, and I was like, by even like, by watching back at it I can go, I can even contrast even further between A and B, where-as before when they said that you kind of just like, okay, when you've actually seen it you can go, okay.

M: So, it helps being able to see your task and then being able to watch it back as well?

All: Yeah, yeah (group agrees).

All the students in the focus group agreed with student K, who articulated how the application, especially the recorded performance, helped them to reflect on their improvisation and identify improvements. They liked being able to view their recent performance alongside the teachers' comments. Figure 6.6 shows the teachers' comments adjacent to the student scores and videoed performances.

Students H and K provided the following account:

Student H: Because sometimes you get the task and you're like oh cool, and then you leave out a lot of the things you get because it's a lot to, like remember and do in that space of time, so I think also, by

looking at it you can kind of reflect on it in terms of what I need to manage better next time, in terms of time managing what you need to do and stuff.

P1 mark 11 + P2 mark 17 + P3 mark 5 + P4 mark 5 = Total mark 38

Performance 1 Performance 2 Performance 3 Interview

Performance 3 : Structured improvisation- marked out of 10 marks and converted to 20%
mark 5/10

Criterion 1: Ideas and movement choices in responding to task mark 3/6 Criterion 1: Ideas and movement choices in responding to task

Makes no attempt to respond to the task and/or does not meet the minimum time requirements.	(1) A limited and or partial attempt at completing the task. A limited use of choreographic tools and structure. Rearranges known movement without expanding movement potential.	(2) A limited and or partial attempt at completing the task. A limited use of choreographic tools and structure. Rearranges known movement without expanding movement potential.	(3) Adequately completes the task. A competent use of choreographic tools and logical structure. Rearranges known movement relevant to the set task. Movement choices reflect an understanding of the concept of the task.	(4) Adequately completes the task. A competent use of choreographic tools and logical structure. Rearranges known movement relevant to the set task. Movement choices reflect an understanding of the concept of the task.	(5) Successfully completes the task. A clear trajectory (structure), decision-making process and development of ideas relating to concept from start to end. Uses choreographic devices and contributes a personal and imaginative exploration of movement and response.	(6) Successfully completes the task. A clear trajectory (structure), decision-making process and development of ideas relating to concept from start to end. Uses choreographic devices and contributes a personal and imaginative exploration of movement and response.
---------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Criterion 2: Confidence, commitment and creativity in performance mark 2/4 Criterion 2: Confidence, commitment and creativity in performance

Makes an inadequate attempt at the task.	Presents a performance that lacks confidence.	Presents a mostly confident performance.	Presents a confident and committed performance.	Presents an engaging performance with confidence and commitment.
------------------------------------------	-----------------------------------------------	-------------------------------------------------	-------------------------------------------------	------------------------------------------------------------------

Comment

Binary

Set solo contrast

A - body, time lovely manipulation of section with time and body contest clear

B – space, maximisation good use of elements and devices

Stillness could hold for longer

TASK 3

Perform an improvisation in Binary Form, i.e two contrasting sections A and B.

Select two contrasting movement phrases from the Set Solo. Use these phrases to devise two contrasting sections.

In each section manipulate the choreography of the set solo.

In Section A – use different aspects of space and body.

Minimisation
Angular shapes

In Section B – explore a contrasting floor plan and use the following choreographic devices:

Accumulation
Retrograde

Use stillness as the transition between A and B.

Performance space
10 m x 8 m (approximately)
rectangle,
marked on floor

↑ 2 m distance

Play Video Play Enlarge Video

Figure 6.6 Marking Key, Score, Videoed Performance and Markers' Comments for Performance 3

These students gained a deeper understanding of how to improve their response through engaging with the DAapp. To further the notion of critical engagement, Students H and K provided the following account:

Student K: The interview, you get given a question, and it's usually before, based on the improvisation as well which you haven't seen and they ask you to go into detail, so basically, it's like rambling off an entire essay, on the spot, off the top of your head, which is really difficult when you're saying it, when compared to writing it, when you have time to not ramble.

M: Yep, so you feel like you can articulate it a little bit better when you're given a written text?

Student K: Yeah, you can articulate better, because you're not wasting time trying to think of what you're going to say next, which then makes you stuff up what you're saying now.

M: yeah. And how do you find the rest of the exam impacts on that final part? Are you able to answer the questions easily?

All: No, breathing, tired, you're so tired.

Student H: The order of it I find, personally really bad. Doing the improvisation, I find like I'm not that tired after doing the improv, but because you've just done the set solo and the OSC and you go into improvisation and you don't perform as better in your improvisation, coz it's not like the improvisation is exhausting, it's what you've just done before, and then because all of that, you're just all exhausted and then you get to sit down and you interview and they go, okay start now, and they don't even give you time to breathe...

All: [communal laugh in agreement].

Students H and K believed that having a reminder of the task for performance three (the structured improvisation) within the application, helped them to remember

what the task was, for them to be able to then support their response as they found it difficult to even remember what the task was to then be able to talk about it and how they produced an improvisation based on it. The discussion from students H and K suggests that memory and recall were a problem for them when answering the interview questions without the features within the application. Student K also spoke about being able to articulate better when writing about the task with considered reflection compared to *rambling* during a live interview with the examiners immediately after the performance. Finally, all students in the focus group agreed that the order of the examination also impacted on their ability to speak properly because they were still fatigued from the three preceding performances. The order of the performances for the examination and the nature of the interview itself appear not to be conducive to the assessment model in supporting high order thinking and metacognition thus, the fairness and validity of the test is called into question if some candidates are not able to do what the task requires because they are exhausted and have no time to reflect, breathe or think properly (Linn et al., 1991). These findings from the students also reflect the same concerns raised by the teachers and examiners during their interviews pre assessment as explained in chapter 4. The suggested assessment methodology and application of the DAapp provided various participants support in demonstrating higher order thinking skills and an ability to critically engage with the given tasks (Churchill, 2019), evidenced from different data points and different participants.

Within the DAapp, the video recording of student performances served as a reminder of the task. As a result, student K reported an enhanced ability to respond with clarity and conviction in the interview, consistent with the initial teacher interviews that raised concerns about the ability of students to engage critically and respond with confidence:

Student K: Another really good thing was when we were watching it and answering the questions, you could see back what your like task was for the improvisation to answer about that, whereas when you were in the exam, you do your improvisation, you've read the task, but you don't get to see the task again before they ask you about the improvisation, so like, I got asked, 'what elements of the task did you

focus on' and I was sitting there trying to remember what was the task in the first place.

M: Yep.

Student K: So, it was good to be able to see that again while you were answering.

M: Okay good, does everybody feel like that?

All: Yeah (whole group agree).

M: So, do you think the videos are a good way of showing your ability as well, in terms of the actual video itself?

2 students: Yeah, yep definitely.

Student H: Okay, I feel like when you watch the video, the tasks like the set solo, the OSC and the improv are completely different things, it's always like a trend of something you, kind of do wrong, and you can kind of pick up and notice...

M: Things that you wouldn't necessarily know before?

All: Yeah, yeah, yeah definitely (all agree, some nod their heads).

The data indicated that memory, insight and reflection were key positive findings associated with the alternate interview task and benefit of using the DAapp to support the assessment as students were then able to engage more in their evaluations of their performances. The five students who took part in the focus group found that they were able to further identify areas for improvement which they were not made aware of before seeing their recorded performances via their engagement with the DAapp. Interestingly enough their classroom teacher made reference to the better responses deemed from the students doing the alternate interview task supported and enhanced through the use of the DAapp and believed that, *student responses were more thoughtful and there was less performance stress* (teacher survey Q.16). other research

also found that when technology was used to assist reflection, students were enabled to articulate their response more adeptly (Leijen et al., 2009).

The students were also asked to comment on their perceptions of the designated tasks and use of DAapp surrounding the alternate interview. The open-ended responses to questions 3 and 4 in the student survey (respectively) asked the students to identify the two best things about doing the structured improvisation and alternate interview for the practical dance assessment using the technology and the two worst things about doing the structured improvisation and the alternate interview for the practical dance assessment using the technology. The best things the students identified for the most part:

I am able to self - assess myself and see why I was given certain marks, I got to judge my performance and reflect on choices I could have made, Could answer the questions better, Could easily refer back to the assessment task sheet, Being able to have the task and video next to each other, Reflection post performance, Look at own progress, I learnt a lot about how I dance, I was able to reflect on my practical performance and re assess the choices I made, I didn't need to worry about being tired and out of breath when doing the interview, I had more time to think about my interview questions, Being able to reflect and therefore improve my performance, Being able to reflect my improv and look at ways to improve, See where my strengths/weaknesses are.

The students benefitted from being able to visibly see their performances via the app to then be able to reflect on their performance and the choices that they made. They could actually see themselves against the marks they were allocated, and have their performance next to the given task, where they could then answer the interview questions better. A more insightful positioning arose through the use of the DAapp, which allowed for deeper critical engagement (refer to image in Figure 6.6). The notion of reflection and making improvements and progress supported through the applied method and use of the DAapp also links to other findings within the data set from the classroom teacher and the examiners. The classroom teacher in response to question 3 in the survey said a benefit to the task was being *able to reflect on whether students understood task* for their structured improvisation and also believed that, *it was fair*

knowledge testing, without performance anxiety. In response to question 16 in the survey, their classroom teacher believed that the, *student responses were more thoughtful, less performance stress.* Digital marker 1 believed that *allowing students to reflect and respond to their own creative process and performance* were the best things about the alternate task. Thus indicating, critical thinking and a less stressful assessment environment were upheld during the new assessment method (Caine & Caine, 2005; Goleman, 2006; McEwen & Lasley, 2002).

When I interviewed digital marker 1, they believed that the few that got the opportunity to write their response in the app alongside their performance, actually were much more articulate through their written response compared to their actual interview. DM1 believed this was because of their ability to think and articulate under different circumstances and that it is, *fundamentally unfair to ask kids to analyse a performance, immediately after.*

DM1: I don't think the interview should be in the exam at all... because it's a performance exam, and it's also, in terms of brain function, I, it's diametrically opposed to what they are doing. To suddenly sit down and engage your forebrain.

M: Because it's hard to articulate isn't it, your creative choices?

DM1: Well you can practice, certainly kids practice up their exams, and I can see the value in them understanding the difference, for example when they are talking about their improvisation, and they say, "how did you use space", and they start talking about speed, and you go, "oh god they don't understand that", but that may not have been what you saw, and it comes down to a kid who is just a beautiful performer... and you go, "hey the kid can't articulate, but does it really matter when they're out in the stage and we are just being wowed by them". They can't come off, like Ian Thorpe, and talk about, Ian Thorpe's not asked to analyse his race, when he gets out of the pool and he'll say, "oh yeah, yeah, I feel great, I feel good".

An inability for students to access and engage with high order thinking skills appears to be an underlying condition of the original interview task. The (alternate) written part to the alternate interview (in place of being interviewed live in front of a panel of examiners) worked well in providing the students with time and a visual representation of how they performed in their improvisations for them to be able to then articulate and respond with considered reflection, thus providing a more insightful response.

These findings suggest that the DAapp in this instance provides a strategy to alleviate some of the problems with the original construct around Performance 3 (the structured improvisation) and the Interview, as discussed in Chapters 4 and 5. Overall, for the students, reflective practice combined with the use of the DAapp increased critical insight and engagement with task three (the structured improvisation) and the Interview, thus in alignment with other research and their findings where the use of technology helped deepen their critical engagement with tasks (Doughty et al., 2008; Doughty & Stevens, 2002; Leijen et al., 2009; Newhouse et al., 2002; Smith-Autard, 2003; Williams & Newhouse, 2013).

Not only did the alternate interview provide students with an opportunity to enrich their learning and make improvements to their interview responses, the use of the DAapp provided the students with the opportunity to engage further in the assessment cycle. They were then able to understand how it may be used to support the current form of assessment, reflect on their own performances and participate in marking their own performances using the DAapp. They were able to use the marking keys and watch back their performances, thus supporting previous lessons by their classroom teacher where they had gained an understanding of how the marking key was used.

Student Experience of Self-Assessment and Examination Reflection Using the DAapp

The self-assessment and reflection activities that students could participate in ensured every learner had an opportunity to engage with the DAapp and provide feedback on their experiences. It was during this exploration that the students not only

completed the alternate interview task (if possible) but they also had the opportunity to see their other recorded performances: Performance 1 - The Original Solo Composition, Performance 2 - the Set Solo, Performance 3 - the Structured Improvisation and part 4 - the Interview, alongside the marking keys. Although student marks were not used for data analysis as discussed in Chapter 3, and few responses were recorded because of the limitations to the required infrastructure within the school, most students were still exposed to the experiences of reflection and self-assessment using the DAapp.

Increased Awareness Through the DAapp

The open-ended question six from the survey asked the students, what were best things about the marking of practical dance assessments using the technology? The results revealed that being able re watch, mark and view performances deepened their understanding and critical engagement with their performances and how they can improve their work in the future. Below are the responses from the student survey for question 6.

It is helpful to view the improvisation – my thought process, It is helpful to view the improvisation task and decisions I made on the spot, It is easy to reflect my mistakes, Reflecting on improvements, It's easy and portable, It's fun, Teachers can look over assessment again, Students can self-mark and see what they did wrong, I got to view how I could improve my technique of the set solo, If not present can still mark, You can get a closer look, I could mark myself and reflect on the decisions I made, knowing what areas needed improvement, The marking key was easy to understand and use, It was nice to see the marking key whilst viewing the work.

Visual access to the marking key beside the onscreen performance was also deemed an advantage. The usefulness, ease, and fun of marking performances added to the activities. It was evident from discussions in the focus group that the interlinking aspects of visualisation, insights and understanding were appreciated and acknowledged by the students:

Student H: Erm, with the usual assessment, they write down feedback but sometimes it's hard to apply what they've written down without seeing what you've done yourself, so you can't go back, go back and go, oh like look at myself and see what I've done coz you don't have any way of looking at it.

M: So, are you talking about, which part of it? All of it?

Student H: Yeah, so they'll just write down feedback, but it's difficult to apply it when you, sometimes, it might be brief notes and stuff. Sometimes it's difficult to apply it to yourself without seeing it.

M: So, for you, video evidence would be really good?

Student H: Yeah, exactly yeah, because then I can actually see, when we do, sometimes when we do the practice assessment in class, before the exam, they write down notes, but I still can't see myself, so I don't know what, what I'm doing wrong without visualising it.

Students H, K and F all agreed that without having the video evidence alongside the marking keys and teachers feedback comments, they were not able to properly visualise and interpret what the sometimes brief, comments/feedback actually meant against the awarded scores, suggesting that it was hard to then apply the feedback without the visual aid for reflection and critical understanding. Figure 6.7 below shows the feedback for student H for Performance 2 - the Set Solo

← × → : P1 mark 11 + P2 mark 17 + P3 mark 5 + P4 mark 5 = Total mark 38

Performance 1 Performance 2 **Performance 3** Interview

Performance 2 : Set solo in the contemporary genre - marked out of 25 marks and converted to 35%
mark 17/25

Criterion 1: Execution of technical dance skills mark 3/6 Criterion 1: Execution of technical dance skills						
Does not demonstrate the technical skills in the set solo.	Executes minimal technical dance skills in the set solo with inadequate control.	Executes some of the technical dance skills in the set solo with many inconsistencies in control.	Executes some of the technical dance skills in the set solo with minor inconsistencies in control.	Executes most of the technical dance skills in the set solo with minor inconsistencies in control.	Executes the range of technical dance skills in the set solo with minor inconsistencies in control.	Executes the range of technical dance skills in the set solo with consistent control.
Criterion 2: Body alignment mark 3/5 Criterion 2: Body alignment						
Displays no body alignment throughout the set solo.	Displays inadequate control of body alignment relating to the choreography of the set solo.	Displays many inconsistencies in control of body alignment relating to the choreography of the set solo.	Displays some inconsistencies in control of body alignment relating to the choreography of the set solo.	Displays control of body alignment appropriate to the choreography of the set solo.	Consistently maintains a high level of control of body alignment appropriate to the choreography of the set solo.	
Criterion 3: Interpretation of choreographic intent mark 3/4 Criterion 3: Interpretation of choreographic intent						
Performs the set solo with no connection to the choreographic intent.	Performs the set solo with limited connection to the choreographic intent.	Performs the set solo with intermittent connection to the choreographic intent.	Performs a sound interpretation of the set solo and maintains a clear connection to the	Performs an artistic interpretation of the set solo, capturing the nuances of the choreography.		
Criterion 4: Musicality mark 2/3 Criterion 4: Musicality						
Displays inadequate rhythmic accuracy and lack of musicality throughout the set solo.	Displays minimal rhythmic accuracy, limited musicality and incorrect timing of movements within the set solo.	Displays some rhythmic accuracy and/or embodies most of the choreography through the contrasts in the music. Shows minor inconsistencies with timing of specific movements within the set		Displays a strong sense of rhythmic accuracy and clearly and consistently embodies the choreography through the contrasts in the music. Sustains accurate timing of specific movements within the set solo.		
Criterion 5: Presentation mark 3/4 Criterion 5: Presentation						
No attempt at presentation.	Overall performance lacks confidence. Limited commitment and focus throughout set solo. Movements are largely marked rather than fully performed.	Presentation skills in some sections of the set solo are inconsistent. Some sections of the performance lack confidence, commitment and focus.	Presentation skills are mostly sustained throughout the set solo. Performance is mostly confident, committed and focused.	Presentation skills are sustained throughout the set solo. Performance is confident, committed and focused.		
Criterion 6: Performance accuracy mark 3/3 Criterion 6: Performance accuracy						
Does not complete the choreography of the set solo.	Performs the choreography of the set solo with significant errors.	Performs the choreography of the set solo with minor errors.	Performs the choreography of the set solo with no errors.			

Comment

A good start.
 Relax your face and try not to lick your lips.
 Continue to strengthen your core and the stabilizing muscles of your feet and knees.
 Don't cut movrmts short as you get tired or as the dance progresses

Performance space
 10 m x 8 m (approximately)
 rectangle,
 marked on floor

↕ 2 m distance

Play Video
Play Enlarge Video

Figure 6.7 Marking Key, Score, Performance and Marker Comments for Performance 2

By adding in the suggested method of reflection facilitated through the use of the app and amalgamation of footage, feedback and marking, these learners are

supported through various learning multimodalities i.e., visual, audio, verbal and written modes and embodied ways of knowing. The students' reality is experienced, and knowledge learned through a process of doing, rather than the information being directly passed on from their teachers, thus informing a new desire to use the DAapp to enhance learning and assessment more. Other dance educators also discovered that the shift away from the traditional way of learning through the vertical power hierarchy (where just the teachers directly pass on the information to the students) allowed the students to become more aware, informed and effective as learners (Hong, 2006; Pennison, 2004).

Figures 6.8 and 6.9 show the students' perceptions of the DAapp to support practical assessment, self-marking and reflection in dance.

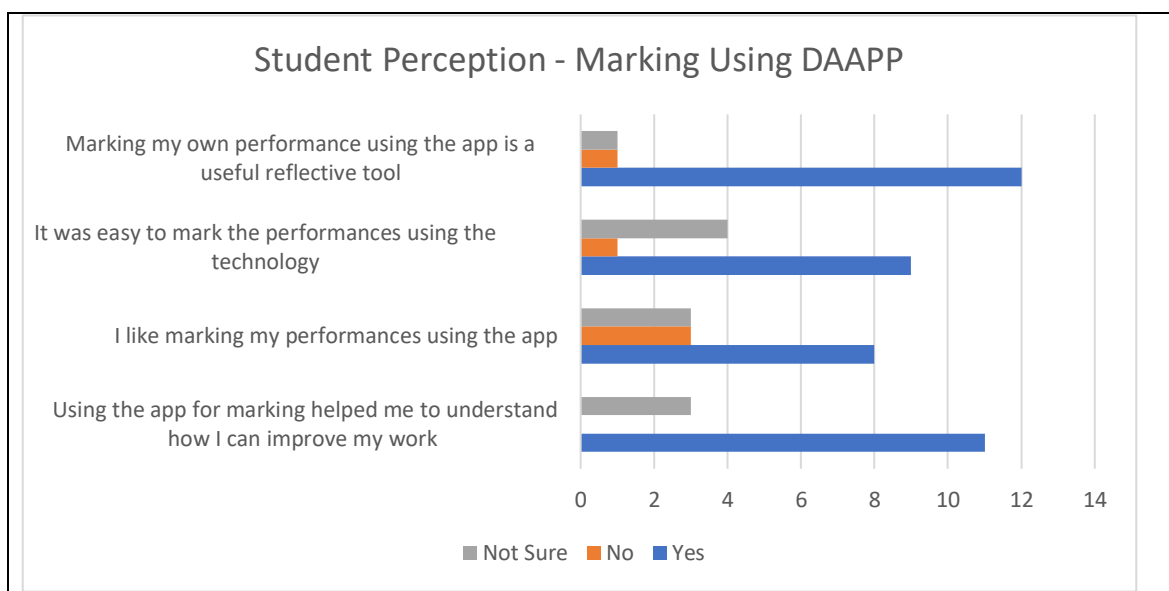


Figure 6.8 Student Self-Assessment with the DAapp

The survey results demonstrate that a large majority (12/14) of the students found the technology a useful reflective tool, that the DAapp was easy to use and that it helped them to understand how they could improve their work. For all students to feel certain about the benefits of the DAapp as an assistive method in supporting learning and assessment, further time and implementation into the taught curriculum would be necessary. Figures 6.9 and 6.10 below displays the results to the students'

feelings and the teacher/markers feelings respectively towards digitally enhancing the assessments in dance.

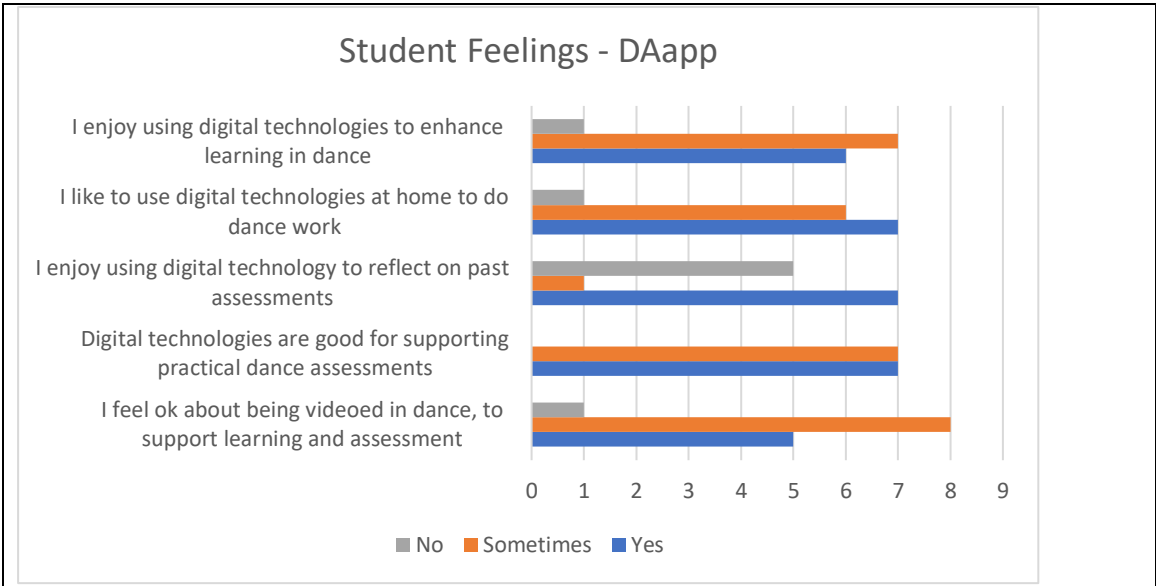


Figure 6.9 Student Perceptions of the DAapp for Supporting Assessment

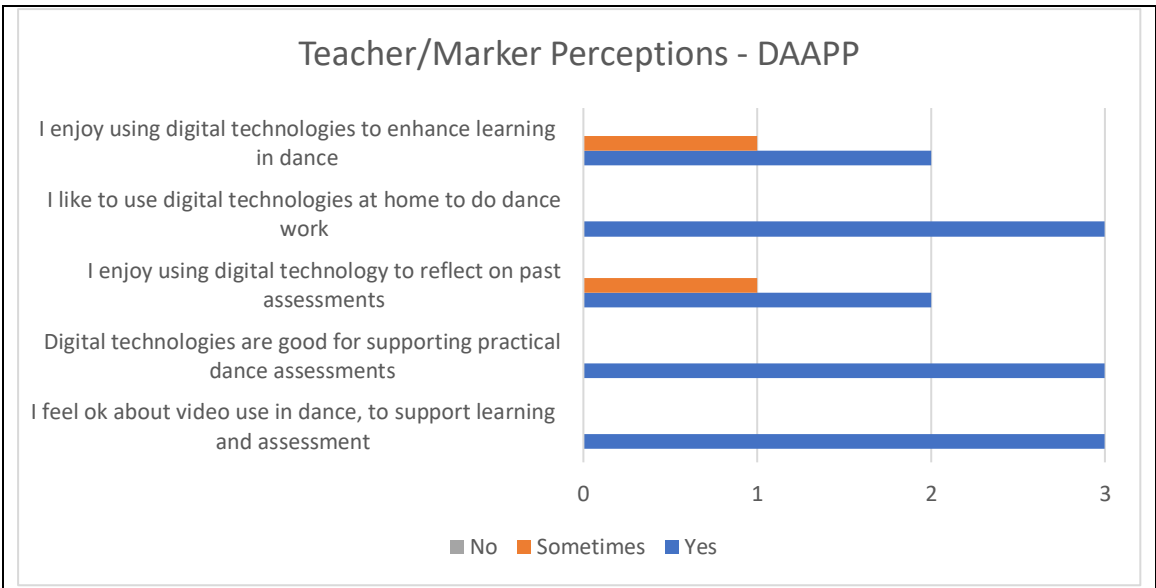


Figure 6.10 Teacher and Marker Perceptions of the DAapp

The data from the surveys imply that the students, their teacher and the digital markers mainly enjoyed using the DAapp to enhance learning and assessment in dance and believed that they were good for supporting the practical assessment. The implementation of the DAapp provided assistance for students, teachers and markers

to learn through their reflective experience, thus knowledge was gained and their reality understood through a process of change (Hickman et al., 2009).

For the students, their reasons for *sometimes* enjoying using the technology was most likely linked to the fact they had only engaged with the technology a couple of times, they feared judgement and for some, there was a lack of enjoyment being filmed. The notions of judgement will be discussed in more detail under limitations. Both the class teacher and the digital markers believed the DAapp was good for supporting practical assessments and all were ok with the use of video to support learning and assessment. More time with the technology would possibly help to alleviate some of these problems. Interestingly however, what also became evident was a desire for the students, their teacher and the markers to embed further the use of digital technology into learning and assessment.

A Desire for More Embedded Practice

Figures 6.11 and 6.12 show the student, teacher and markers' enthusiasm for digital technology in dance, as derived from the survey results.

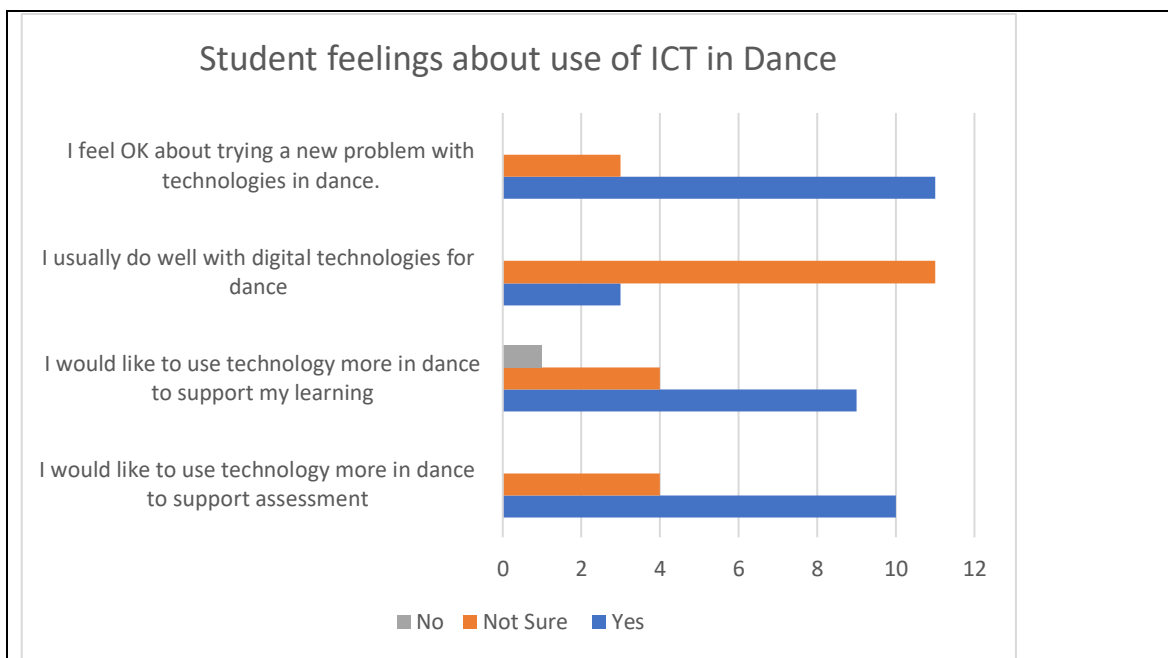


Figure 6.11 Students' Feelings Towards ICT in Dance

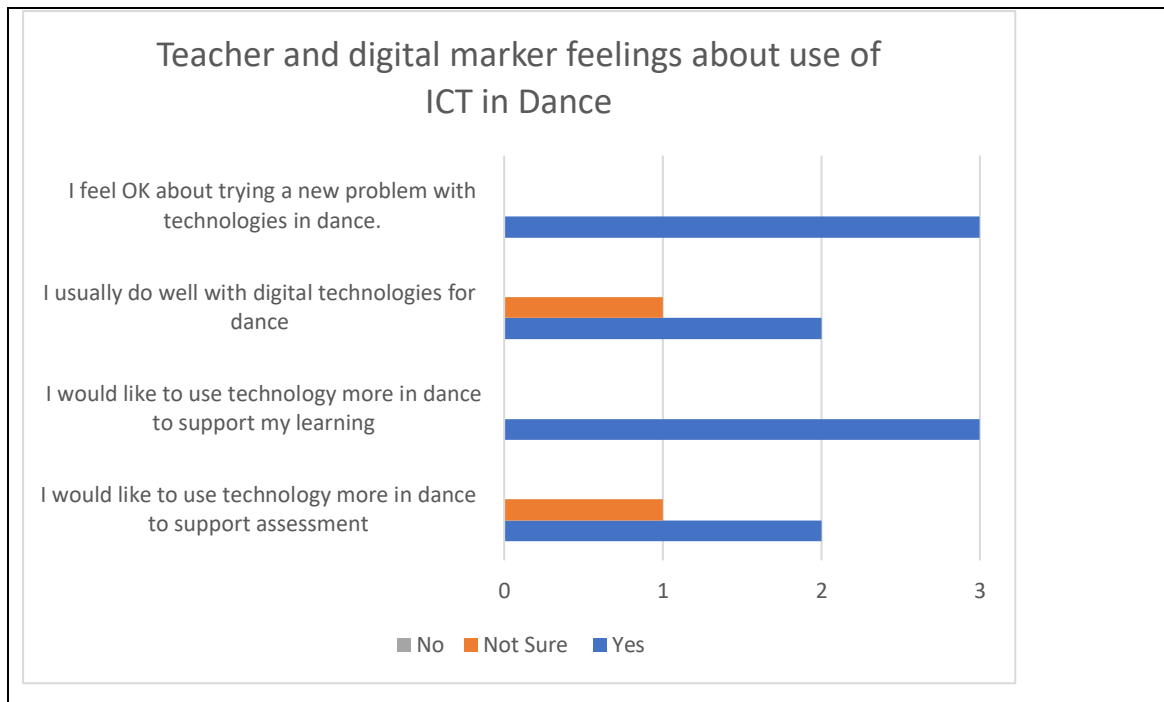


Figure 6.12 Teacher and Markers' Feelings Towards ICT in Dance

The results indicate that all the participants enjoyed the experience of using technology in dance and wanted to continue exploring its potential for learning and assessment. The majority of students were unsure about how well technology was being used in dance, suggesting it was not common practice. In addition to their expressed desire to use the DAapp for enhancing learning and assessment, the findings also suggest that they wanted to engage more with technology in every aspect of the curriculum. Figure 6.13 below reveals the results to question 8 from the student survey: Do you, or would you, use digital smart technologies to do the following for dance?

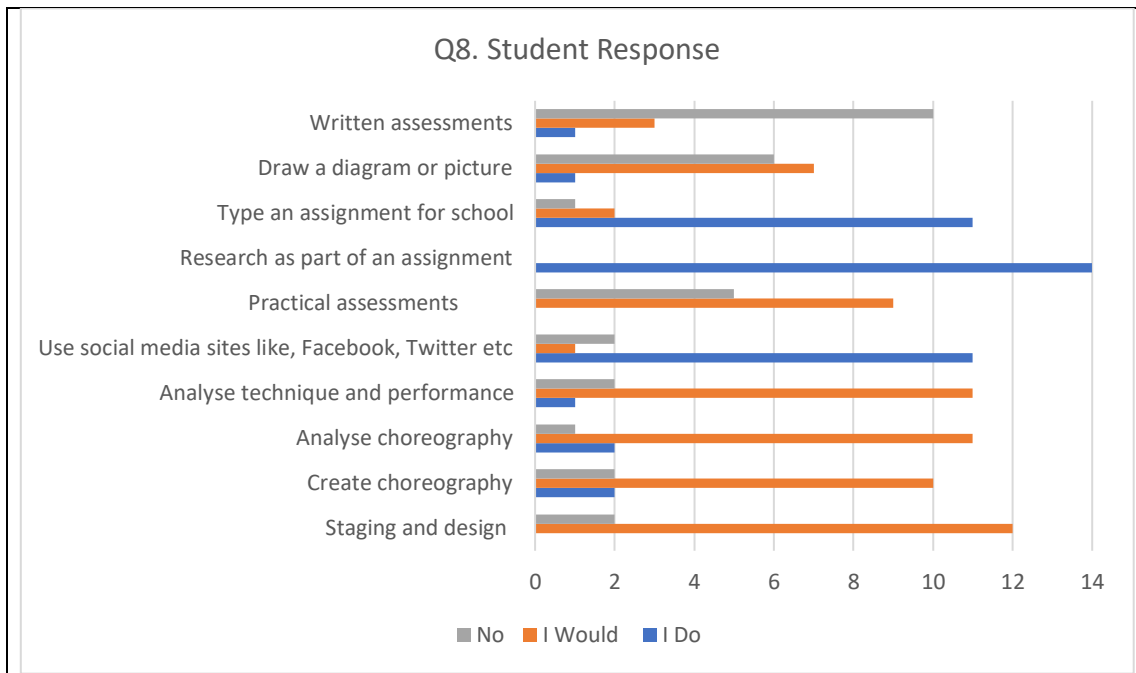


Figure 6.13 Students' Current and Desired Use of Smart Technologies in Dance

These results reveal that students have a desire to engage with technology more in dance. Predominantly they engaged with smart technologies in dance to connect socially, to type up assignments and to conduct research as part of an assignment. However, what is interesting is that a large majority would also like to use it more not only to analyse technique, performance and choreography, but also creatively. Technology is something the students engage with outside of school to support their learning in dance through the use of social media and conducting research. However, in school they are bound by the limitations to resources and implementation, possibly due to policy and procedures put into place by the school, teacher education, the demands of the curriculum and time limitations placed on their teachers (see Chapters 4 and 5) to be able to effectively implement such practices. A holistic approach to digital/mobile technology through the applied dance curriculum will be elaborated on in later discussions and conclusions in Chapter 7. The notion of embedded practice through the curriculum was also linked to findings which suggest that the moderation and training benefits that the DAapp could offer to students, teachers and markers were seen as beneficial from the students, the classroom teacher and the markers.

Moderation and Training Benefits

In addition to the DAapp proving to be reliable in the capturing and entering of marks both in live and online settings during examination environments, another finding which emerged from the data was the benefits to teacher and examiner training, moderation and having exemplars of student assessment and levels of achievement against the set standards. This is something which came up repeatedly for both students, teachers and markers in using the DAapp to underpin and support the practical examinations.

These triangulated findings are provided by different data points including the student focus group interview, the classroom teacher survey, the interview with the curriculum specialist Stella and the digital marker interviews and surveys and the classroom teacher survey. Below is a sample of these findings from the different participants. The first example is from the interview conducted with Digital Marker 1:

DM1: I think for training purposes I think it would be really good, for training and reflective practice of students, and training of teachers so there's a greater understanding of what they're, each of those things mean (criteria and marks) I think, yeah definitely.

M: What about for those schools that are, you know, out in the country and find it harder to have a moderation partner?

DM1: Yeah, well that's, then that makes it a very useful tool.

DM1 supported the use of DAapp for training and moderation and believed it would help generate a shared understanding of how to mark examinations, especially for those educators where distance is a significant factor. To further this notion the survey (see Appendix E) asked what the two best things about the marking of practical dance assessments were. The classroom teacher responded with, *moderation and the review of process for feedback* and *fair and helps moderate*. Digital markers DM2 and DM1 said respectively, *can re-watch performances* and *doing distance/remote access to moderators and back up/review for teacher/student*. Interestingly enough, the classroom teacher also said in response to question 15 from the survey that they could

do their best quality of work because it was *fair and helped to moderate*. The classroom teacher also found that the other good points were for *students unable to attend usual exam, it's a fair process of assessment*. In response to question 16 on the survey, DM1 believed that they also *could take more time considering the students work* and that the *time between students was less compressed and stressful during marking*. The classroom teacher and the digital markers all answered *yes* to the usefulness of the designed application with regards to teacher education and training, examiner training and preparation for examinations for students and teachers (survey, Q12 b, c, d). It is possible, that the method and technology afforded in this study could house large amounts of assessment data, which judgements could be made about dance education, dance schools, dance teachers and examiners, and ultimately, the learners (Pellegrino & Quellmalz, 2011).

Exemplars of Achievement

Using exemplars to engage students and assessors in assessment is deemed beneficial practice (Handley & Williams, 2011; Orsmond et al., 2002). Below is an excerpt from the student focus group regarding their desire for sample exemplars of achievement.

Student K: When we were marking the set solo or whatever, I feel like we needed like a model to base, like what we were marking our self.

All: Yeah, yeah, yeah.

Student K: Like what a five category looks like compared to a number 1 category.

M: So yeah, this would get you five points, this would get you four?

Student K: Yeah.

Student F: Especially because we are also all overly critical of ourselves, and you can see oh, I'm not doing that there.

Engaging with feedback and understanding assessment criteria depend upon relevance to future learning and consistent marking (Handley & Williams, 2011). This is readily achievable by using exemplars for marking, stored as a repository within the DAapp, to increase collaboration and generate shared understanding.

Shared Understanding

The students believed that having a clearer set of standards supported through specific performance exemplars would benefit their examination preparation by consolidating their understanding on how to achieve against the marking criteria. In addition, this could provide a possible framework and strategy for teachers to support the learners in a constructive critique of themselves (Stinson, 2010). The use of DAapp in supporting moderation and training of markers also relates to what curriculum specialists, teachers and experienced ATAR Dance markers Alex, Lottie and Natalie alluded to during the discussion in Chapter 4 around having video evidence to support marking and moderation processes.

DM1 marked the school-based examinations for the participating school later that year and verified that the approach to conducting the school-based assessment for that particular school with regard to this research and the use of the applied DAapp had since altered:

DM1: What is actually interesting is that the last lot of exams, because the technology has shifted, now the teachers based on this (research) is that teachers are videoing with their computers, at the same time as using their computers.

This comment suggests teachers and students from the participating school identified the benefits and advantages to recording dance performance examinations whilst marking and moderating using the DAapp. Thereafter, they attempted to implement similar strategies albeit through their personal laptops and through various applications such as Photobooth, iMovie, Word and Excel. DM2 also regarded the DAapp as a, *convenient tool to watch and re watch performances if need be*, and that it was *easy to use, it was clear in layout of the rubric for all parts of the dance examination*. The

video evidence and capture of performance for reflection, the recording and entry of marks are all desirable features of assessment for standards setting, moderation, training and teaching as found with other research in the field (Wren et al., 2013). In opposition to the positive findings and perceptions of the participants regarding the alternate tasks and marking of assessments using the DAapp, there were also some limitations and negative perceptions uncovered.

Limitations

In contrast to the many positive reactions to the alternate task, marking, moderating, and training with the DAapp, students' responses to question 4 uncovered some resistance to being videoed.

Use of Video and Fear of Judgement

The following student responses to question 4, asked them to identify the two worst things about doing the alternate interview task, indicate their concerns:

Knowing you're being filmed can affect performance, Angle of filming may cause confusion, There's a record of how you went and what you said, even if you did badly, Video/self-conscious, Having other people possibly watch it, the angle, Confronting to look at what you did, It was difficult to overcome my critical mindset on my performance, Reduces your self-esteem, negatively judge myself, My mistakes are easily reviewable, More pressure to give more info due to being reviewable, There was no strict timing for the interview, It was a bit confronting to look back on my performance and I didn't enjoy viewing myself as I focused on the faults, It was confronting to look back on the performance, The technology was hard to navigate, The technology was slightly hard to work and navigate.

Evidently, many students experienced some level of discomfort being filmed. However, when the topic was discussed in more detail in the focus group, all the students agreed it was something they could overcome, given the benefit of more time and critical engagement with assessments.

Student E: I was fine being videoed.

Students K and I: Yeah, yeah.

Student F: Like at the start, like when we found out I was kind of like, oh, but then I watched it the first time, got over it. The fact that it was me, was really handy.

Student E: Yeah, it's actually really useful.

Student H: Like it was good, like I need to know that I did that.

All: Yeah, yeah (all in agreement).

M: You don't really want to watch yourself.

All: Haha, yeah, yeah.

M: So, once the initial shock of seeing yourself, then you actually see that it's actually a benefit? (questioning).

All: Yeah, yeah.

M: All agreeing?

All: Yeah.

Despite students' initial dislike of being filmed, they recognised the benefits of digital assessment; and as their feedback to question 2 suggests (see Figure 6.4), ultimately preferred the alternate interview with technology to the original method. They appreciated the advantage of being able to make improvements once they had moved beyond their initial discomfort. The classroom teacher claimed that the tasks *worked well* and the students *enjoyed it towards the end when they could see the purpose*. Being able to reflect and learn about themselves and their progress is a key feature of arts practice (Burnard & Hennessy, 2006), and future implementation will require a methodology that continues to support reflection and progress in a positive learning environment, where students are taught to observe themselves objectively. Question 7 of the survey asked the student participants:

The two worst things about the marking of the practical dance assessment task using the DAapp. Below are a list and summary of the responses:

Markers can re watch and decide they don't like the performance as much, Peers may watch, Looks different on video than in person, I'm critical of myself, making it hard to mark accurately, It was difficult to mark myself as I had nothing to base it upon, I don't wish to have another peer assessing me, Some of the filming wasn't clear, Reduces your self-esteem – negatively judge myself, Loose little movements sometimes, Not as good as real life, Being marked again, not the same as in real live performance, Being too hard/easy on yourself because you are marking yourself, The technology was hard to navigate.

Again, the responses were predominantly around their own critical judgment of themselves, not liking others viewing/judging their exam, the digital representation not being as good as a live performance and markers being able to go back and change marks. Their classroom teacher also acknowledged that the, *students were sometimes negative regarding video*. The peer feedback activity was not completed by the students due largely to the infrastructure at the school and limited time to then be able to explore peer feedback effectively. However, the following excerpt from the focus group of students revealed their initial concerns around the possibility of peer evaluations and giving honest feedback to their peers.

Student H: I feel like, I'm the kind of person, especially in my younger years, like struggled with the way like, I was being judged by other people. Like social anxiety and that kind of stuff and the idea of peer feedback really just gives me the feeling of like the social anxiety

M: Okay, and that's not something you could get over?

Student H: Definitely not, no.

Student K: No one's going to like, mark anyone else badly anyway.

Student I: Well especially I wouldn't anyway, as I'd feel bad for doing that, because I'd be like, this person has tried hard.

M: So, for you, you would mark emotionally as well as?

Student I: I would just mark emotionally, not even what they are doing, just 10 out of 10!

Student H: At the end of the day, I'd say we are all pretty close.

Student E: Yeah, we're all pretty close.

Student H: None of us would want to be mean to another person, and I know you're not intending to be mean.

Student H: But that's the way it feels.

Student E and Student F: Yeah, yeah.

Student I: I feel like it would be different if I didn't know the person, like if it was someone from another school I probably wouldn't care because I know I probably wouldn't see them again.

With more time given for students to be able to participate in the peer feedback activities, they may be able to experience a positive, constructive and collaborative learning environment through the use of the DAapp. Further exposure and establishment of a supportive environment alongside the development of knowledge towards the assessment and the possible activities could alleviate some of the initial angst expressed. Considerations towards both the emotional and motivational factors of those involved cannot be dismissed. The emotional links appeared to be related to self-image and self-worth/esteem, judgement and critique of self and by others. The barriers to the students' learning possibly governed by the emotional disposition of the learners in the context of receiving judgement from peers with regard to past experiences, thus leaving them with a fear of future judgement (Webb et al., 2018). A supportive peer community is vital if any future collaborative online platforms for dance education are to be adopted in Australia, thus in relation to other research findings in other parts of the world (Hsia et al., 2016a; Lin et al., 2019).

There is significant desire and motivation to use more technology within teaching, learning and assessment. However, the students' lived experiences currently dictate the level to which they are prepared to engage with digitally enhanced assessment, opting to use it preferably to support them in a context where they do not have to engage face to face with their peers and assessors. These findings suggest that engagement and motivation are linked to the social, emotional and cultural issues experienced by the dance students, thus, a long standing acknowledgement (Dewey, 1913), which will be elaborated on in the next chapter as part of a discussion. An awareness of these issues was only touched upon, therefore further research uncovering the depth and breadth of these issues requires further investigation.

Interestingly enough, when students were asked to comment on their perceived strengths and limitations to the original exam, another contradiction occurred, where students challenged the nature of the original construct, suggesting that the performance examination itself was not realistic in essence and that the use of video to support learning and assessment would be advantageous.

Live Performance Authenticity

Below is a list of responses and a subsequent summary of the responses to question 11 and 12 from the survey. Question 11 asked the students to comment on:

The best things about the usual practical dance assessment:

You can't see yourself, therefore I feel less embarrassed, performing to people, You get to see your marks, Once it's done it's done and you don't need to look back, Showcase what you have worked towards, It's short, Knowing what is happening, Mistakes can be forgotten, It's over with and finished until you get the mark, It is over with and no reflection (visual) is required, No confronting filming, Less pressure of mistakes being reviewed,

Question 12 asked the students to comment on:

The worst things about the usual practical dance assessment:

It's scary, Stressful time limits, Stress/pressure, can't reflect on it, Not enough breaks, Not being able to look back at it and review for yourself, Structure of exam, i.e. OSC, set solo, improv, interview, Examiners intimidating, Not sure where exactly, where you go wrong, Can't reflect and learn from mistakes that effectively, No means for reflection, Can't learn from mistakes.

The responses suggest that for some, fear, stress and pressure are perceived as the worst features of the usual form of assessment (Lupien et al., 2007; McEwen & Lasley, 2002). In addition, both the best and worst things about the usual practical dance examination (without digital enhancements) is not having the opportunity for reflection via seeing and analysing their performances yet being videoed was something they did not at first enjoy. The notion of fear and judgement through their experiences of the usual live examination in front of a panel of examiners, even without being videoed was also apparent.

The value of a live performance from the dance educators' viewpoint is one which is held in high regard. The end of course summative examinations for dance are not just a performance for entertainment. The dance examinations make a significant contribution to the overall final rankings for their ATAR, where students are seeking to gain as many marks as possible to obtain a ranked score for university entrance. An interesting dialogue emerged between the students discussing the final examination and their fears which impact on their performance and how they feel, thus the realism and authenticity of a live performance during live examination conditions came into question.

Student K: Because a performance isn't like you're being assessed and criticized, a performance is people going there to watch, for their enjoyment and to see you and enjoy what you're doing. Where-as an assessment is like, they're assessing how well you do things, your dance technique, they're critiquing you, that's when you get that negative feedback, it really comes back at you!

Student F: Critique, yeah!

M: So, do you find it easier to perform for an exam or for a performance on stage?

Student I: Harder for an exam.

Student H: Harder for an exam.

Student F: Yeah, exam definitely!

Student E: I get more nervous for an exam because you know, they're going to be picking up any mistakes from it.

Student K: Yeah, any little thing they'll pick up, whereas when you're performing, the audience generally doesn't even notice when you like, fall over.

Communal: Ha-ha, yeah.

Student K: They have no clue.

Student H: Usually you enjoy performing, like performing is something, we come, like, that's what we do, that's what we love.

All: Yeah, yeah, yeah.

Student H: And usually when you're performing, you're generally doing something you like, where-as, to be honest with exams, you're not really doing something you like.

Student E: You don't really want to be there.

All: Ha-ha (agreement).

Performance assessment is best accomplished when the realism of a situation permits the student to be able to perform adequately in order to demonstrate their learning (Fitzpatrick & Morrison, 1971). The students' fear of judgement and critique played a significant role in their ability to be able to enjoy their performance as they would in a real performance setting, thus in some cases affecting their ability to perform under the same conditions with the same feelings attached (Caine & Caine, 2005;

Goleman, 2006). The survey responses from the students for question 2 (see Figure 6.6) revealed that students felt supported that they could do their best quality of work. The majority agreed that the use of DAapp in place of speaking in front of a panel of examiners to support the structured improvisation and interview was preferable. The ability of the students to be able to perform the criterion measures was seen to be supported through the use of the DAapp according to the classroom teacher, digital markers and the students, thus indicating a possible increase in validity and reliability of the test. Having a more reliable content measure, would go some way towards supporting the validity of the criterion measures (Kane, 2001; Messick, 1989), with the data implying that through the support of the DAapp and suggested assessment method, that this may be achievable.

Interestingly, LM4 believed that the application and capture of the examination against the comments and scores awarded by examiners would be a good reflective tool to use post performance to justify and breakdown to the students why they were given the mark that they were.

LM4: Yeah, that's (DAapp) probably a really good reflective tool for the students, and you know, to go back and unpack why they got that mark.

M: Um (acknowledgement).

LM4: And specifically, where people may comment on a correction, that they can actually see in their video what they were talking about.

The above statement suggests that school-based examination reflection was not current practice with their students. The findings from the students post assessment (who did get a chance to view their performances against the teacher comments, rubrics and scores) reveal that having the DAapp as a supporting tool to help deepen knowledge and understanding of the assessment and where improvements could be made, verified Live Marker 4/teachers' feelings. It is possible, because there is a misalignment in applying technology to support assessment during the usual assessment practice (matched to the ATAR exam) and as part of teaching and learning, could be the reason

it was not used, despite an awareness that this may be best practice. Time for exploring new ways of supporting the assessment through technology could also have been a limitation to this process.

The data has shown that the use and suggested method of the DAapp has benefits in supporting summative assessment and training and formatively within classrooms. Problem solving, critical thinking and collaborative learning are skills upheld in this process - skills deemed necessary for the 21st century (Erstad & Voogt, 2018). Modern dance practice is bound by the parameters of assessment and often limits progress and exploration as time is seen as precious and investigating new ways in the given context is time consuming. Digital exploration within dance was often limited inside school practice, which is largely to the discretion of classroom teachers and resources within schools. Having tight timeframes and limitations within the taught curriculum was a continual underlying current running throughout this investigation. The teachers consistently referred to a lack of time particularly when bound by the current demands of the curriculum and protocols of assessment. Post assessment, the classroom teacher acknowledged that one of the worst things about using the DAapp within the assessments was that they, *just need to embed time to make it work*. The DAapp could also be used to relieve some of the time constraints and stress placed on teachers. Having students be able to access and discuss work online, from home requires less contact classroom time, thus a feature within the application which unfortunately was not used, however was acknowledged as a desire expressed by dance teachers and curriculum specialists Lena and Lily in their interviews.

Summary

The results from the data presented in this chapter have provided evidence which suggest that there are both strengths and limitations to using the DAapp to support assessment. What came up consistently were the formative benefits to the DAapp in supporting high stakes assessment as seen by the participants through their experiences, which related to critical engagement, marking, moderation and training and a new desire for an increased engagement with technology to support learning and a shared understanding of assessment from all involved in the assessments (students,

teachers, markers, curriculum experts). The representation of an authentic dance performance was challenged in both live and digital examination contexts, where a fear of judgement and critique was central to both contexts. Nonetheless, more time was needed to engage with the suggested assessment and application of the DAapp for full strengths and limitations to be fully established.

What is apparent from the results for this chapter and the preceding two chapters is that a framework for balancing out the use of mobile technology in assessment both for and of learning in dance is not only feasible, but necessary. The final evaluations and conclusions will be completed in Chapter 7, where the parameters of assessment, curriculum and policy, pedagogy, technology and culture, contextualise the argument for a digitally facilitated process of examination.

Chapter 7: Discussion and Conclusion

This chapter further discusses the findings from the study and addresses the research questions:

In what ways can digital technology in the assessment of dance be used to support the current form of assessment?

Are the results of assessing the digitally enhanced dance examination consistent with assessing the original, and what are the likely causes of discrepancies?

What are the perceptions of the students, teachers, and markers of the digitally captured dance performance for assessment?

The chapter first addresses research questions two and three, followed by an address of the overarching and first research question. The discussion centres around how technology may be used in the assessment of dance in education and how the findings support an assessment methodology both for and of learning. The concept of continual change and skill development support a challenge to the status quo, given the recent and shifting digital landscapes not only in dance education, but globally and one which is reinforced through the conceptual framework and my theoretical perspective. Thus, a new framework for the digital enhancement of dance assessment is offered which supports the new knowledge acquired from the study. Complimentary to this is the implications to policy and practice and recommendations for future research. Finally, the generalisability of the findings is presented and an overall conclusion to the study is given.

The evidence presented in Chapter 5 provided answers to research question two:

Are the results of assessing the digitally enhanced dance examination consistent with assessing the original, and what are the likely causes of discrepancies?

I will now provide an overview of the findings to the research question stated above.

Addressing Research Question Two

Despite there being some limitations to the digitally enhanced dance assessment, which could be somewhat alleviated through more exposure and training with the resources and recent advances in technology, the DAapp itself was found to be reliable and thus supported the ranking for performances 1 and 2 (the original Solo Composition and the Set Solo), where there were less discrepancies with the use of the analytic marking keys. The digital markers were less consistent with their scores for performances 3 and 4 (the Structured Improvisation and the Interview) compared to the live markers. Nonetheless, there was still some inconsistencies in scoring for the live markers too. The marking keys were sometimes used differently, by giving different scores within the same descriptor, which in turn did not support the validity of scoring (Kane, 2001; Miller & Linn, 2000), particularly regarding performances 3 and 4 (the Structured Improvisation and the Interview).

The method used with the DAapp appears to be able to produce reliable results as there were many occasions where the scores between markers and across contexts (live and digital) were consistent. However, because there were instances of inconsistent scoring between live and digital markers, some limitations (regardless of the DAapp) were highlighted. Thus, the use and method applied to the DAapp in places inhibited the reliability of the scores where markers awarded different scores. This was due to poor sound quality, authenticity and representation of the performance, equivalent technical replication between rooms and the technicians operating the equipment, all of which have technical solutions.

The functionality and interface regarding data entry was deemed user friendly and the usability in terms of time and giving feedback was seen as beneficial. There were no technical problems with the scoring systems, thus the scoring system itself was not considered to impact upon the validity of the assessment.

The evidence presented in Chapter 6 provided answers to research question three:

What are the perceptions of the student, teacher and marker of the digitally captured dance performance for assessment?

I will now provide an overview of findings to the research question stated above.

Addressing Research Question Three

Overall, the students, their classroom teacher and markers perceived both strengths and limitations to digitally capturing the dance performance for assessment. The digital representation of the captured performance was frequently referred to as unsatisfactory in depicting energy dynamics, performance persona and small gestures by students, the classroom teacher and the markers. However, the reflective benefits found to enhance engagement with tasks and the marking of them were deemed beneficial. In addition, all participants expressed a desire to apply the use of the DAapp more to enhance teaching, learning and assessments in dance.

Student Experience

The students felt supported to do their best quality of work regarding the alternate interview task because they could critically reason and respond to the questions regarding their improvisations. They also reported that conducting the interview digitally was preferable to being interviewed live. Situational factors such as the stressful environment, fatigue, memory and an inability to articulate properly in the original context were alleviated with the alternate interview task. They also found that by engaging in viewing their examinations alongside the scores and comments from their markers also helped to deepen their knowledge and understanding of the assessment and how to apply the feedback, facilitated through using the DAapp. Some students reported that the technology was easy and fun to use, whilst a couple found the technology hard to navigate. Although most found marking their own performances beneficial, more time and exemplars of achievements were required. Some students did not like being filmed because they judged themselves negatively and some reported to not like others (examiners and peers) judging them either.

Teacher and Markers' Experience

The classroom teacher, who also marked the live examinations using the DAapp felt supported to do their best quality of work and believed that the use of the DAapp supported the moderation process and believed that they could provide more substantial feedback to their students. The classroom teacher also facilitated the exploration of the DAapp with their students and believed that the activities helped them to further comprehend the students' level of understanding and that the students enjoyed taking part in the research project more towards the end, once they understood the purpose.

Digital markers 1 and 2 and live markers 3 and 4 believed that the use of the DAapp for reflective practice and for all to gain a shared understanding of the assessment and how it is marked could not only support students in their endeavours to achieve higher marks, but also for the training of future teachers and examiners. LM1 believed that they too were supported in their feedback because the application helped them with dyslexia.

Despite this, the digital markers raised concerns around the equity of the set-up of the rooms and the consistency between different technicians capturing the performances. The poor sound quality was also reported as something which needed to be improved upon. Nonetheless, using the recorded performance provided the markers with what they considered the most useful aspects of digital marking, for the capture of the ephemeral piece is there for review should examiners have discrepancies or need to review the work to viably assess all aspects of a performance, which can often otherwise be missed.

Overview of the Findings

Chapter 4 highlighted teachers practice with technology and assessment, the different use and approaches of technology more broadly within dance education and the perceived benefits that technology could play in enhancing the assessment of dance from experienced teachers, examiners and curriculum stakeholders in the field. Thus, Chapter 4 significantly contributed to providing answers to the overarching research

question. New knowledge gained in the field of secondary dance practice and assessment from Chapter 4 highlights the disconnection between how technology is (or is not) used in summative assessment and the implications this has on current pedagogic practice, understanding of and preparation for high stakes examinations. Ultimately, teachers were bound by historical practices and points of view which were current amidst vast changes to culture and society (Stinson, 2010). Teachers attitudes and skills influenced their uptake of ICT during teaching, learning and assessment and the varying degrees to which they were exposed to different technologies gave rise to feelings of powerlessness and hesitance. The teachers and examiners were open and aware of changes and willing to explore the ways in which technology could be used to support teaching, learning, assessment and the demands of the curriculum but were somewhat bound by the summative model, resources, policy and time.

Chapter 5 provided insight into the results of assessing both live and digitally captured dance performance examinations with the explanations to the likely causes of discrepancies. Chapter 6 provided insights from the students, their classroom teacher and the markers into the exploration of alternate assessment activities which used the DAapp as a facilitation tool. Themes were developed and analysed from the different data points in conjunction with the numerical data from the surveys and examination results. The mixed method embedded design allowed for the analysis of both qualitative and quantitative results and overall convergence, which have provided insight into the phenomena surrounding the assessment of dance and adding in digital facilitation. The following discussion therefore consolidates the address of the overarching research question:

In what ways can digital technology in the assessment of dance be used to support the current form of assessment?

Addressing the Overarching Research Question (One)

Figure 7.1 below shows an overview of the findings and analytic construct from the data collected and discussed from Chapters 4, 5 and 6, thus providing further insight into the ways in which technology can be used to support the current form of assessment



Figure 7.1 Overall Analytic Construct

The findings evidenced in Chapters 4, 5 and 6 and shown in Figure 7.1 above, relate to the strengths or limitations found with digital enhancement of the dance assessment, the strengths and limitations to the original construct and/or the associated teaching, learning and assessment practice with digital technology. Interestingly, the contents of each group linked directly to one or more of the overarching categories formulated from the literature review and subsequent conceptual framework (see Figures 2.2 and 2.3). Thus, the historical, societal and cultural influences, the parameters of assessment (policy and curriculum), use of technology in assessment and pedagogical practice all contributed to the interrelated nature of the findings (as signalled by the coloured arrows within larger coloured boxes). For example, the strengths of the digitally enhanced dance assessment supported teachers and examiners in moderating scores, verifying marks and supporting the reliability of the test by capturing an ephemeral performance, which in places could often be missed. Thus, the developed

dance application and methodology was beneficial as an effective use of digital technology to support the assessment through upholding fair principles of assessment. Another example of the interrelated parts for students was in gaining a deeper understanding of the assessment and how they can improve future performances, improvisations and subsequent abilities to articulate a reasoned response in their interviews. Thus, aligning and linking the suggested methodology to the demands of the curriculum, desired practice of integrating the use of digital technology in teaching, learning and assessment and effectively engaging students in an ongoing process of informed discovery and development. Navigating the next step in pedagogic dance education requires having an embodied understanding of curriculum and applied technology to provide an alignment of skills and goals for the 21st century to bridge the gap between education, assessment, policy, industry and culture.

Figure 7.2 below further details the overall strengths of the designed methodology and applied application in supporting the current form of assessment.

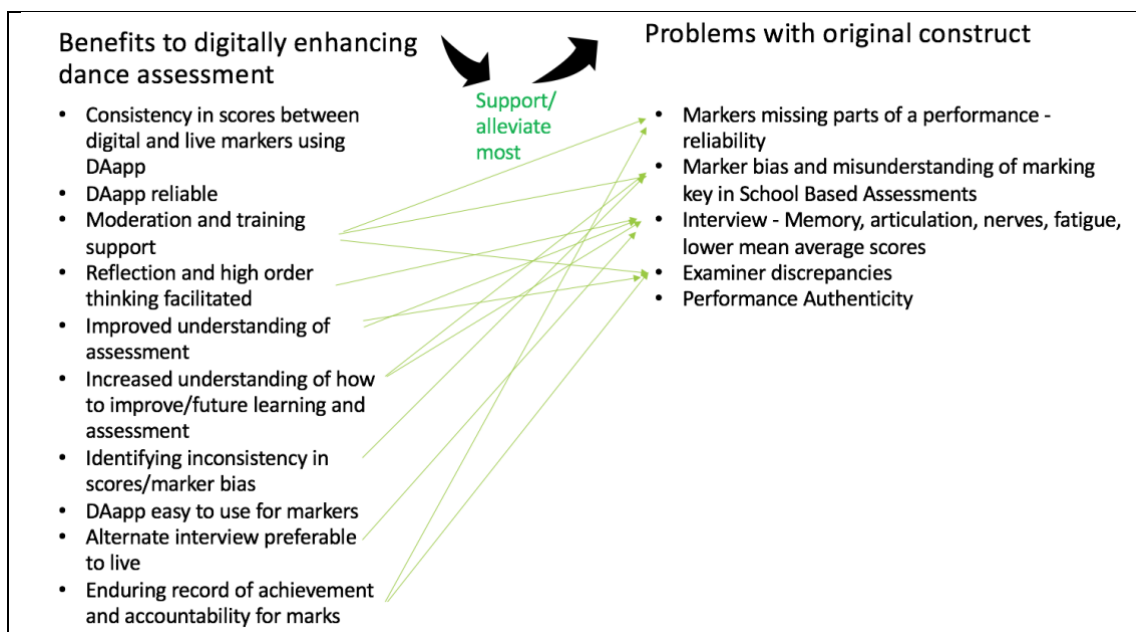


Figure 7.2 Benefits of Digitally Enhanced Dance Assessment

By capturing an ephemeral performance digitally, there was a benefit for the markers in being able to review the performance and verify their marks, thus supporting the moderation process within the assessment and the reliability of the scores. Critical

engagement, consistency in scores between live and digital markers, an improved understanding of assessment and learning and supporting marking and moderation processes are positive findings in association with the uses of the DAapp. Some of the activities within the exploration of the DAapp enriched the completion of tasks, scaffolded understanding progressively and enabled a shared understanding of the assessment (Dickson & Akwasi, 2016; Wilson, 1996), thus in alignment with other research projects where the use of technology have been identified as effective assessment processes for formative assessment, showing particular promise in relation to making use of ICT in a digital environment (Webb et al., 2018).

Despite the many strengths seen to support the current form of assessment, there were also some limitations to digitally enhancing the dance assessment. Thus, the application of the DAapp in some respects hindered the strengths to the original construct, as outlined in Figure 7.3 below.

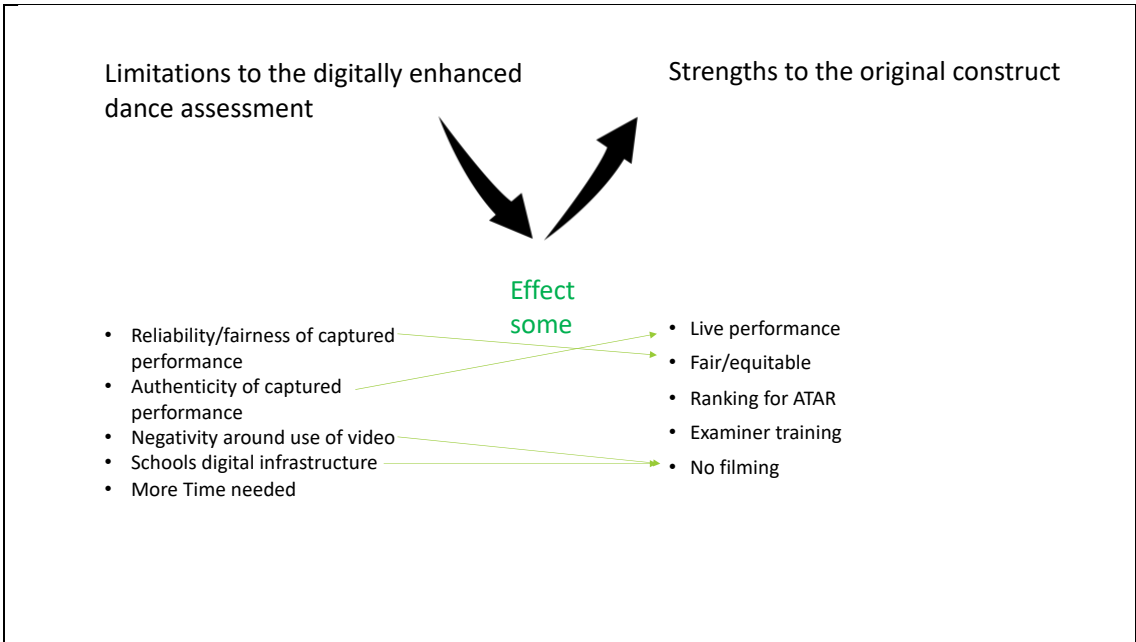


Figure 7.3 Limitations of Digitally Enhanced Dance Assessment

At this stage some of the limitations to the digitally enhanced assessments actually impacted upon the strengths to the original exam as some of the filming and the attitude towards it, impacted upon the reliability of the scores and authenticity of the performance. The training and use of all aspects of technology tools/applications

therefore requires development and understanding into pedagogical practice and formal assessments as knowledge, beliefs and application of assessment practice with digital enhancements can be hindering factors (Webb et al., 2018). Nonetheless, what can be interpreted from the results of this data is that there are ways that the digital enhancement of dance assessment can support both formative and summative assessments.

Finding Balance Between Formative and Summative Assessment

The findings reveal the ways in which the use of the DAapp can support the summative performance examinations in dance, which feedback into formative approaches (and vice versa). The perceptions and experiences from the students, teachers and markers of the digitally captured performances, feedback regarding the exploration of the DAapp, the results from the marking of the two comparative examination methods and interviews with experienced teachers, examiners and curriculum specialists all provided evidence for these findings and are outlined in Table 7.1 below.

Table 7.1 Formative and Summative Benefits to Digitally Enhancing Dance Assessment

Formative	Summative
<ul style="list-style-type: none"> • Reflection, future learning and assessment • Increased understanding of assessment • Critical engagement • Provide more tangible feedback to students against marking key and captured footage • Easy to use/portable • Record of achievement • Support collaborative learning environment and shared understanding of assessment – (students, teachers and examiners) 	<ul style="list-style-type: none"> • Valid scoring system • Reliability in capture of performance to support marking and moderation • Assist with examiner discrepancy • identify/reduce bias • Training and standardisation • Record of achievement/accountability • Support alternate exams • Consistency between digital examination scores achievable

For digitally enhanced assessments in dance to become more viable, there needs to be further links between the practice of formative and summative assessment. Currently there is a lack of connection and teachers are required to find the time to explore with ways technology may help in their classrooms whilst being bound by resource availability and policy which restricts such exploration and desired practice in dance. Given the various ways this study has highlighted that technology can be used to support the current form of assessment, this new knowledge needs to be given some considerations around the implications for future policy, practice and research.

Implications for Policy, Practice and Recommendations for Future Research.

Finding ways to resolve inconsistent feedback from various sources can be addressed through training and moderation, which is paramount to both formative and summative assessment and learner development using data for both ongoing and final evaluations, and a desire from the participants to use such technology to support moderation, training and a shared understanding of assessment. During the assessments for this research, there were discrepancies between teachers examining the school-based assessments which in places was due to the subjective nature of artistic performance and the use of the analytic marking system. This also related directly to what the teachers revealed during chapter 4 when discussing examiner training. Alex, (experienced teacher, examiner, marker and curriculum specialist) also spoke about the differences between school-based scores and final examination scores. This misalignment indicates that strategies need to be implemented which support the training and moderation of teachers, students, markers and examiners to gain a shared understanding and consistency in the standards and ultimately how to improve learner outcomes. This research has demonstrated that the use of the DAapp to support summative assessment is tangible through enhancing moderation and training and formatively supporting teachers and students in their ongoing and reflective journeys of development.

Reflective practice and the applied technology gave rise to understanding actions and meaning in a usually transient performance (Burnard & Hennessy, 2006). However, community learning in the classroom supported through digital representations of

exemplars to support assessment and achievement of standards requires provision, which is yet to be available for students, teachers or teachers in training. The 8-10 examiners who usually mark the practical examinations did have access to such data, however the remaining teachers, students and school-based assessment markers did not. There needs to be an embodied understanding of technology in the course and how to employ it effectively to support the desired curriculum and continual advances in mobile technology. The technology has been around for some time now and is shifting, however, the application around formal assessment is lagging behind.

The exam needs to incorporate technology so that it aligns to the desired teaching, learning and assessment benefits that are achievable (as found) with the assistance of the DAapp. The exam could also/or be progressively assessed with more formative underpinnings, culminating in the final result of progressive change and supporting alternate exams, injury or misadventure, fair assessment, moderation processes and student-centred learning, rather than a fear inducing end model.

Skills for the 21st Century

Creativity and critical thinking skills are central to the assessment of the students in these examinations. The DAapp and applied methodology within, played a role in supporting critical and insightful thinking and responses, with evidence towards reflective engagement for both the tasks and the marking of the examination (from the perspective of the markers, teachers and students). This indicates that the supportive nature of the DAapp combined with the ability to manage the process and inform future practice, is favourable.

I wonder what the future of the dance assessment is in the digital age moving forward, given it has previously been on the dance curriculum content, the standards and how these documents define practice. Societal and future societal changes are rapid and will continue to shape and redefine dance in the 21st century. However, educational process and curriculum development is much slower. By linking specific knowledge, skills, understandings and values in dance, 21st century skills such as creativity, critical thinking, problem solving, communication and collaboration also an inherent and desired practice within dance education, could go hand in hand with continual

developments in digital and mobile technology. When mobile technology use in the dance classroom is aligned to the nature of assessment, teachers will then be given the time and opportunity to effectively engage in mobile technology through the taught curriculum, matching the skill set needed for the next generation of workers and dancers. Thus, the formative underpinnings of summative assessment and balance required to maintain an adaptive future discourse and equip the current students with learning processes and skills which support and define the 21st century are somewhat upheld.

Assessment in dance and the use of technology as the vehicle for future progress, I believe is the key component in upholding such practices to support this and the next generation of learners and educators in dance. Thus, my thinking for dance education aligns with those advocating for 21st century skill development (Binkley et al., 2012; Erstad & Voogt, 2018; Webb et al., 2018).

A Challenge to the Status Quo

Change is imminent, yet slow, but desirable and necessary. I still find myself asking, what really matters in terms of dance assessment and what is considered important in the current climate? The current model of examination used to gain a ranked score depicts the comparative success of students against one another, rather than their own contribution to their development and individual success. Dewey, argued this system of examination gives the weaker child an inferiority complex and thus a fear of judgement (Dewey, 2003). Issues of power and dominance clearly affect these students as the fear of judgement from their assessors reveal the effects the interrelationships between them, the curriculum and the governing body has on their experiences (Popkewitz & Fendler, 1999). The participants in this study revealed a desire to employ more technology through the applied curriculum with a perspective that the further use of technology could be used to support learning and assessment. However, what can be interpreted from this alongside the parameters and restraints from aged and practiced assessment models, was the development and uptake of mobile technology in supporting such endeavours as individual success and skill development has been halted, thus another polarity.

This pragmatist inspired piece of research and form of social inquiry is seen to sit fundamentally in the political world of practice, where the application and development of new approaches to integrated use of technology and assessment are carried out under organisational control (Corbett & Hill, 2018). Nonetheless, the majority of participants alluded to a desire and openness towards change and transition regarding the use of technology in supporting not only assessment, but all areas of the applied curriculum. For changes to take place, developing a shared understanding of what works in a dance class to support assessment alongside advances in technology requires interrogation (Brown, 2015). Since this data was collected, the quality of video has increased, the cost of implementing such technologies has dropped and the band width has increased. Live streaming platforms such as Zoom, YouTube and Facebook provide dance educators and instructors from anywhere in the world opportunities to teach and assess performance, choreography and technique, thus forcing a shift in practice and perspective regarding the use of video during teaching, learning and assessment.

This attitude towards development alongside technology is shaping and defining our future. To further highlight the notion of imminent change, one only has to look at the recent advances and uptake of online learning and assessment and the use of mobile technology in the midst of the current pandemic, to realise that maintaining historical practices is virtually impossible in the current climate. For example, new and exciting global initiatives due to the impact of COVID-19 are now connecting highly acclaimed dance teachers and their students from New York and LA to students in Australia, through the Virtual Dance Centre (VDC). Matthew Prescott from the Jeoffrey School of Ballet who initiated the VDC was at first sceptical in the new virtual arena, however, discovered that once all expectations had been dropped, a new understanding emerged regarding the difference in the experience and thus accepted by him and his students. Prescott, recognised that growth could actually happen in the new online space and believed there was a new level of comfort in the virtual dance world that would be here to stay (Searle, 2020). There is clearly a shift happening in the industry and within professional practice, however, how fast educational policy and practice infiltrates this paradigm with rigorous assessment practices that are fair, valid, explicit, comprehensive and educative is paramount. Given Australia (and the rest of the world) is not out of the

crutch of the pandemic, alternate digitally enhanced dance assessments could be key areas for development.

New knowledge to the field of secondary dance education from this study specifically uncovered some of the issues surrounding assessment and the application of digitally facilitating the process to support not only final evaluations, but the implications for formative practice and the interplay between them. This study offered a new assessment method which integrated a holistic approach to teaching, learning and assessment of dance performance for high stakes examinations and the preparation for them using a dance assessment application specifically developed for its purpose. Community, collaboration and harnessing mobile technology to support teaching, learning and assessment was deemed necessary and desirable from the participants. These very notions are key in establishing a relevant curriculum in the midst of what is happening globally. This research has added new knowledge and understanding from influential participants in the field about dance practice, assessment of dance performance and the possible benefits to digitally facilitating such practice. Thus, future practice and policy can begin to further align assessment with the taught and desired curriculum of the 21st century. A further review to current practice and pedagogic models to match changing contexts is therefore recommended, because the current examination requirements are still based on 20th Century practices in a world which has significantly altered, due largely to advances in technology.

Cultivating modern pedagogical practices is crucial to accommodate the fast-tracked change taking place within society and could be encouraged by incorporating innovative methods of digital assessment (Redecker & Johannessen, 2013). Collaborative learning environments and digital forms of assessment have widely been accepted as authentic and reliable (Masters, 2013) which dance educators in WA now also support, as this study reveals a broader and more shared understanding of assessments and its requirements is desired. Thus, policy to support such practice is required.

This research engaged with the use of mobile technology and school-based learning and assessment to provide a method and approach that successfully facilitated

high order thinking, critical, creative and reflective practice and strategies to meet standards and improve assessment authenticity. The findings from this study contribute to an improved understanding of strengths and limitations of using digital technology in a practical dance examination and importantly, how this could be cross referenced to other fields.

New knowledge for dance in secondary education also consists of issues around marking, understanding assessment, critical engagement and reflection, perceptions around digital assessment and the alignment of summative and formative assessment in dance with the desired and progressive curriculum of the 21st century have been somewhat uncovered. The effects of digitising dance assessment and emphasising its strengths and limitations along the way have been exposed, an area previously under researched for high stakes secondary dance education and assessment.

For the purpose of dance assessment, future policy and practice require modification. The results to this study imply that digital representations of student dance performance are beneficial. Thus, performances could be viewed from anywhere around the country or around the world by multiple markers at different times and for various objectives such as online moderation, examiner training, classroom-based assessment activities or students on teacher education courses. In addition, digital storage and live streaming are cost effective (Masters, 2013) and are seen as beneficial to remote students and teachers travelling to examination sites undertaking ATAR Dance examinations. Despite the authenticity of a digitally captured dance performance not being truly representative compared to a live performance, a new awareness and acknowledgement to the benefits of digitally enhancing dance assessment from this study, lay in the beliefs of those involved and that value and worth was contextually added.

I believe that a new framework for dance assessment with digital enhancements should be central to facilitating the embedded practice of mobile technology for students, teachers and assessors so that formative assessment aligns with and informs summative assessment rather than being dominated by it. When technology use in the classroom is culturally relevant and responsive, support will then be in place for the next generation of learners. However, what is fundamentally important is that policy and the curriculum allow for such practice and changes

to take place so that the dance curriculum becomes more responsive to matching the skill set required for future dancers and dance educators. Developing and maintaining the symbiotic relationship with culture, arts practice and the global community will then be more seemingly aligned. Figure 7.4 outlines my framework for digitally enhancing dance assessment.

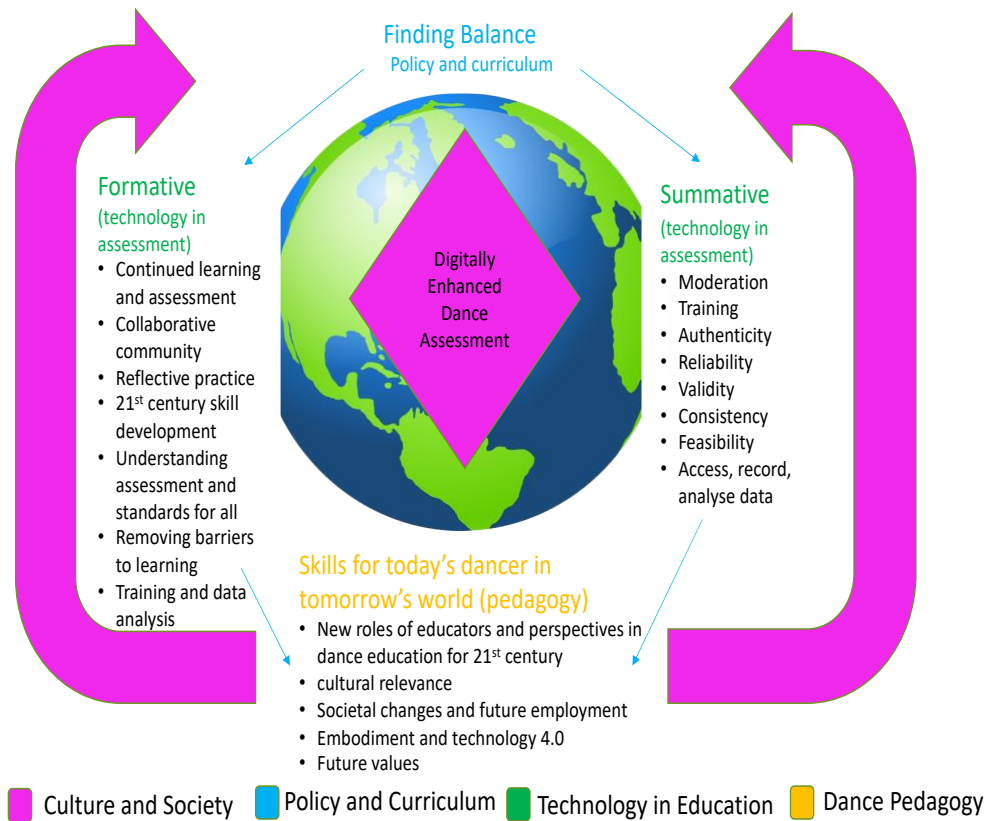


Figure 7.4 Framework for Digitally Enhanced Dance Assessment (DEDA)

The above DEDA model is contextual for today's situation in Australia (and other parts of the world where dance is informed by a final evaluation model of assessment). However, as time progresses there will be shifts within the content due to the surrounding context. Universal issues, such as developments in technology, crisis such as global pandemics or environmental matters, will undoubtedly continue to impact and influence education and educational policy at an ever-increasing rate. As developments in technology surge, I suspect the value and enhancement that can be brought to dance education and assessment through collaboration and a documented process, will

provide a platform that upholds the rigour and value necessary to measure achievement and align with arts practice.

Values regarding performance are shifting. Combined with the ever-developing virtual reality and artificial intelligence et al, there needs to be a continual consideration for teaching, learning and assessment as the relationship with the body and technology is shifting and advancing. Practice time in the space is fundamental to the development of dancers' physical and technical skill development, therefore digital technology can be used to engage learners and educators with an integrated and holistic understanding of new technologies. This would then link to curriculum content requirements and expected capabilities which support assessment practices for students, teachers and examiners. This in turn would further connect dance education to a cultured understanding as pedagogy, technology, culture and policy are not disparate entities. However, more research is needed into the current and changing values and contexts in dance education and assessment to integrate the notions of embodiment and technology 4.0 in dance for teaching, learning and assessment. Future research could involve a complete online system of dance examination involving considered reflection for all aspects of the examination utilising technology and enhancing every step (performance, technique, choreography, appreciation, theory, marking, recording). Any methods incorporating technology developed today need to take into consideration what the current issues are and how these new technologies will navigate future directions and impact on the development of the future curriculum, future generations and their unforeseen roles of the future.

To inform future policy and the decisions regarding VR, MR, AI and AR and the impact these inclusions could have regarding the dance curriculum and the assessment of the dancing body, will challenge historical perspectives of a well-established generation and shape the future discourse. After all, the next generation of educators are generation Z and the alpha generation, who were already born into a technologically dependant culture which is part of their desired and lived experiences (Dorsey, 2015). This investigation therefore served as a relevant pre-requisite to future studies amidst imminent change. I am sure I am not alone when I ponder if the future definition of dance is no longer just about the body. As dance educators navigating future directions,

how quickly we piece this all together and take forward our values, some of which are undoubtedly challenged and shape the future curriculum, inclusive of assessment procedure is a progressive situation requiring consistent attention.

Professional Learning in Dance - Teacher Training, Standards and Moderation

Providing training and standardisation to all (school-based, community dance, universities or large dance organisations) who assess practical dance examinations is critical. This could be supported by the method used with the DAapp to not only provide a record to then tangibly discuss discrepancy, but also for the training of teachers, future pre-service teachers, examiners and markers. The system implemented from this research has proved that multiple markers can mark the same performance without any associated paperwork. The marker scores can be viewed alongside the exemplar therefore markers and/or teachers can check their marking and identify their own areas for refinement and future practice.

Aligning the captured performance to the associated marking key and feedback from assessors was a key innovation I incorporated into the method and thus an additional feature within the dance assessment application (from the original prototype) alongside the features and functionality to support the performance examinations and the preparation for them. As time has progressed and there are additional advances to technology and video conferencing in particular, the amalgamation of the features and functionality of the DAapp alongside those from Zoom (for example) could further support live moderation of performances and the training of markers, teachers and pre-service teachers.

This research revealed the use of an application such as the DAapp could be used to support and inform standards and moderation practices during a live dance examination. In addition, reflective practices for students and teachers and future training or professional development sessions for markers, examiners, and teachers, against the given framework and standards is also provided. With exemplars currently lacking for ATAR Dance, this research adds to the viability around moderation and

training processes by capturing student performances against the criterion referenced standards from experienced examiners and markers.

Collaborative Learning and Assessment in a Digitally Facilitated Space

To further engage students and teachers in a shared understanding of assessment, a formative approach and tool which facilitates reflection based on previous performances such as the method used with the DAapp could be used to support learners and educators in their endeavours to maximise scores and for teachers and markers to be accountable for their marks. Thus, maintaining an enduring record of achievement, whilst providing an awareness of their own practice. Nonetheless, there are implications for policy that need to be addressed. The DAapp could house a repository of performances and marks, however what would be paramount in the use of the material would be a clear policy and procedure put in place from schools between the students, teachers and parents and the ethical use of the performance data. Collaborative learning and peer assessment are beneficial practices in dance education, therefore a policy to support such practice is key. Schools and dance studios could build up their data base to inform future learning and reflective practice not only for students in year 11 and 12 or students in higher education, but also informing students in lower years.

This study indicates that having a digitally facilitated learning and assessment environment was beneficial. What could also be taken from this is the capacity to use these tools out of classroom time and for feedback and training at a place and time of convenience, thus alleviating the busy work of teachers and providing more practice time in the dance studio developing dance technique and creative works. Formal assessments in dance were encompassed by the knowledge, beliefs and application of assessment practice with ICT and mobile technology from the students enrolled in the dance course and the teachers delivering the course and the assessments. Further study into the beliefs, knowledge and application of mobile technology into the applied curriculum is required to gain greater depth of understanding to how these values relate to our history and current culture.

A shared understanding of assessment generated through the applied curriculum through the use of embedded practice with digital and mobile technology to support both summative to formative assessments is a possibility. However, further research in the balancing or shifting of this is required to further refine the value and understanding that digitally enhancing assessments in dance can bring to the generation of the future curriculum. An immediate recommendation to support this would be the exploration of an alternate judging system which not only aligns with arts practice, but also explores an alternate to the arguably less effective use of the analytic marking system.

Alternate Judging System

An alternate judging system such as the DAapp, to support formative and summative assessment could be a possibility. By housing a repository of peer performances alongside the associated footage and comments from teachers, formative assessments which are fundamental to the teaching and learning cycle are facilitated. Students could compare their own work to that of others. With analytic marking still giving rise to subjectivity in allocated scores, a holistic criterion and use of the pairwise method could be used to support a freedom within the response of the learners (and teachers) to provide more authentic and tangible feedback, rather than the learning and assessment being aligned to the pre-determined outcomes. A continued use of the DAapp in schools would then build a digital dance portfolio of student performance and assessment which in turn could be used to support large scale final evaluations. The final on the spot live examination may not then be required, thus in turn supporting the developmental nature of dance practice and eliminating the fear inducing final assessment model.

Generalisability

Research on digital assessment for subjects with a practical component is vast (as highlighted through the literature review). Dance can now somewhat contribute to that discussion, however, a larger study with more student participants to adequately validate claims around authenticity, reliability and validity of digital assessment is needed. Statistical measures such as the correlation and reliability coefficient to enhance the validity analysis was not conducted because the sample size was less than

30, thus not giving a true representation of the wider field (Cohen et al., 2011). Despite this, it was still possible to consider if scores in one context (live examinations) were consistent with scores in the other (digitally captured performances) to measure the targeted outcomes, supporting discussions and interpretations around the parameters of assessment such as bias, subjectivity, fairness, equity between room set up and technicians capturing performances, reliability and performance authenticity. This was supported through the triangulated findings from the surveys and interviews.

Regarding the problem of the low mean average scores for the interview, the alternate digitally facilitated task again could not be measured to draw significant conclusions around score correlation between assessment methods. However, what the student participants did reveal through participating in the alternate interview activity and comments during the interviews and survey findings indicate that the combination of not being able to remember their improvised two-minute sequence and task, nerves, a fear of judgement, exhaustion and the task itself are actually hindering factors and affected their ability to process and articulate the required reasoned response. Thus, the alternate interview, technology and methodology was deemed preferable by all participants. Finally, triangulating the findings from the interviews and the surveys also allowed for the rigour needed to verify the opinions and voices of the professionals in the field. Particularly considering the voices of the key industry experts who were part of the study (within a small population) were heard.

Overall Conclusion

The significance of this research exists in the development of new teaching, learning and assessment methodologies using the re-purposed and newly functioning Dance Assessment Application (DAapp), to maximise outcomes in the practical dance examination. Professional learning materials were developed aimed at the Australian Curriculum and ever advancing technological learner. Thus, the goals and objectives of the course are more aligned with and inform assessment, rather than which currently stands, that is, assessment informing teaching. There is an alignment between summative assessment and its formative underpinnings which are crucial in an Arts course and gaining a shared understanding of assessment between students, teachers

and markers. Digitization of the dance examination process is key in challenging the entire notion of the final, on the spot examination and its fairness. Alongside this, the significance of the research further related to and informed other research being undertaken in other ATAR subjects or projects exploring assessment within the Centre for Schooling and Learning (CSaLT) at ECU.

The results of this study provided insight into the ways digital enhancements can support the current form of assessment. The perceptions of the students, teachers and markers on their experiences of using the suggested methodology with the DAapp and the likely causes of any discrepancies in scores between the different assessment methods have been highlighted and analysed. Alongside the performance authenticity during a live examination not being deemed representative to a live performance context, the other contributing factors such as reflection and critical engagement with the tasks also diminished the students' ability to respond as effectively as they could have. Nonetheless, for these students, their discomfort in being judged and evaluated occurs whether they are performing for a live examination or being viewed digitally. Overall, the alternate interview task and self-marking activity was deemed beneficial in critically engaging the students' in the task using considered reflection and the support of the DAapp.

There is an indication that parameters of assessment in this instance (fairness reliability and validity) are challenged by adding in the DAapp, yet significant benefits (found by the majority of participants) are seen by doing so, particularly with regard to marking, training, moderation and reflective practice within teaching, learning and assessment. The original problems with the exam, are somewhat alleviated by the use of the DAapp. The problems and limitations that were found, could easily be solved with more training and development of staff, procedures and the resources. The application of the DAapp and its benefits, the desire of the participants to use more technology within the curriculum, aligns to the purposes of the curriculum. The application of formative mobile technology enabled assessment may well be the required course of action in modern dance assessment.

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Appendices

Appendix A – Semi Structured Interview Questions

Teacher, examiner, marker and curriculum specialists

1. What are your thoughts on the current format of the practical WACE Dance exam?
(Strengths and limitations from examiner and candidate perspective)
2. What are your overall opinions of the structured improvisation section of the examination?
3. What are your overall opinions of the interview section of the exam?
4. Why do you believe there is consistency in the low mean average scores of the interview section of the examination?
5. Do you believe the current format is a fair assessment of the required skills in dance?
6. What are your thoughts on digitally enhancing the dance assessment, i.e. recording the candidate performing their improvisations and allowing them to view their performance to be able to reflect on their work?
7. Do you believe an exam which enabled considered reflection using digital smart technology for both examiners and candidates during the exam would be beneficial in any way?
8. What are your thoughts on the digital representation of the dancing body for assessment?
9. How do you currently use ICT in teaching, learning and assessment?
10. What are your thoughts on the marking key for section 4, the Interview?
11. How do candidates generally respond to being interviewed?
12. Are there any other thoughts or suggestions for improving the current assessment of the practical WACE Dance exam?

Appendix B – Structured Improvisation Tasks

Used for part 3(structured improvisation) of the dance performance exam

TASK 1

Perform an improvisation in **Binary Form**, i.e. two contrasting sections **A** and **B**.

Select two contrasting movement phrases from the Set Solo. Use these phrases to devise two contrasting sections.

In each section manipulate the choreography of the set solo.

In Section A – use different aspects of body and time.

- Isolation
- Use a slow tempo

In Section B – use different aspects of space.

- Maximisation
- Curved pathways

Use stillness as the transition between **A** and **B**.

TASK 2

Perform an improvisation in **Ternary Form**, i.e. three contrasting sections **A** and **B** and **A**.

Select **two** contrasting phrases from the Set Solo. Use these phrases to devise three contrasting sections.

In each section manipulate the choreography of the set solo.

In Section A(i) – use different aspects of body and space.

- Transference of weight
- Low levels

In Section B – use different aspects of energy.

- Percussive movement dynamics

In Section A(ii) – repeat the structure and intent of A (i) but explore a contrasting level.

Use a slow motion movement as the transition between **A** and **B** and **A**

TASK 3

Perform an improvisation in **Binary Form**, i.e. two contrasting sections **A** and **B**.

Select two contrasting movement phrases from the Set Solo. Use these phrases to devise two contrasting sections.

In each section manipulate the choreography of the set solo.

In Section A – use different aspects of space and body.

- Minimisation
- Angular shapes

In Section B – explore a contrasting floor plan *and* use the following choreographic devices:

- Accumulation
- Retrograde

Use stillness as the transition between **A** and **B**.

TASK 4

Perform an improvisation in **Ternary Form**, i.e. three contrasting sections **A** and **B** and **A**.

Select **two** contrasting phrases from the Set Solo. Use these phrases to devise three contrasting sections.

In each section manipulate the choreography of the set solo.

In Section A(i) – use different aspects of energy.

- Swinging movement dynamic
- Percussive movement dynamic

In Section B – use different aspects of space.

- Diagonal pathways
- Levels

In Section A(ii) – repeat the structure and intent of A (i) but explore a contrasting tempo.

Use a vibratory movement as the transition between **A** and **B** and **A**.

Appendix C – Interview questions for part 4 of the exam the Interview

Question 1 - relates to performance 3, Structured Improvisation (markers to select 1)

- a) What elements of a score did you consider in preparing your structured improvisation?
- b) Discuss your use of space/levels/dynamics in your structured improvisation
- c) Explain how you used contrast in the B section (and C if applicable) of your structured improvisation

Question 2 – relates to performance 1, Original Solo Composition (markers to select 1)

- a) Discuss how you manipulated the elements of dance to develop choreography for your Original Solo composition
- b) Describe the process you went through in exploring the choreographic intent of your original solo composition
- c) If you were to take your original solo to performance what design elements and or production components would you consider using?
- d) In what way does the structure of your Original Solo Composition reflect your intent?

Appendix D – Marking Keys

used for dance performance examination by participating school.

Performance 1 marking key (OSC) was created by the classroom teacher from the participating school, the marking keys for performances 2, 3 and the interview were taken from the 2015 practical dance examination marking key from SCSA.

Original solo composition		<u>(10 marks)</u>
Description		Marks
Criterion 1: Choreographic intent		
Solo or (part thereof) displays a clear connection to the stated choreographic intent.		2
Solo or (part thereof) displays intermittent connection to the stated choreographic intent.		1
Total		2
Criterion 2: Organising the dance structure (sequencing, transition, repetition, variation and contrast, unity – manipulation of the elements of dance (BEST) as they relate to dance composition)		
Solo demonstrates unity of structure through skilled sequencing of movement. Uses a skilled selection and manipulation of the elements of dance (use of BEST) throughout most of the solo.		5
Solo demonstrates unity of structure. Sequencing of movement and use of space may sometimes be predictable. Demonstrates competent manipulation of the elements of dance (use of BEST).		4
Sequencing of movement is simple and predictable. Movement choices are from a known source. Demonstrates adequate and/or predictable manipulation of the elements of dance (use of BEST).		3
Sequencing of movement is simple and predictable. Movement choices are mostly from a known source. Demonstrates limited and/or ineffective manipulation of the elements of dance (use of BEST).		2
There is a basic structure to the solo with ineffective use of BEST.		1
Solo is ineffective. Inadequate use of BEST.		0
Total		5
Criterion 3: Presentation		
Performance presented is confident, committed and focused. Performance mostly engages the viewer.		4
Performance is mostly confident. Commitment to the movement and focus are sometimes inconsistent.		3
Some of the performance presented lacks confidence, focus and commitment to the movement		2
Performance presented lacks confidence. Limited commitment and focus throughout the solo.		1
No attempt at presentation.		0
Total		10
Criterion 4: Safe dance practices and alignment		
Consistently applies safe dance practices. Generally demonstrates good use of alignment principles.		2
Mostly applies safe dance practices. Demonstrates some use of alignment principles.		1
Solo performed without regard to safe dance practices. Limited or no alignment principles		0
Total		3

Performance 2: Set solo in the contemporary genre		17.5% (25 marks)
Description	Marks	
Criterion 1: Execution of technical dance skills (fluent control of the body, coordination, quality of line, breadth of movement, transfer of weight, capacity to move in and out of the floor)		
Executes the range of technical dance skills in the set solo with consistent control.	6	
Executes the range of technical dance skills in the set solo with minor inconsistencies in control.	5	
Executes most of the technical dance skills in the set solo with minor inconsistencies in control.	4	
Executes some of the technical dance skills in the set solo with minor inconsistencies in control.	3	
Executes some of the technical dance skills in the set solo with many inconsistencies in control.	2	
Executes minimal technical dance skills in the set solo with inadequate control.	1	
Does not demonstrate the technical skills in the set solo.	0	
Total		6
Criterion 2: Body alignment (posture, pelvis placement, knee alignment, parallels, carriage of the arms, landing from jumps)		
Consistently maintains a high level of control of body alignment appropriate to the choreography of the set solo.	5	
Displays control of body alignment appropriate to the choreography of the set solo.	4	
Displays some inconsistencies in control of body alignment relating to the choreography of the set solo.	3	
Displays many inconsistencies in control of body alignment relating to the choreography of the set solo.	2	
Displays inadequate control of body alignment relating to the choreography of the set solo.	1	
Displays no body alignment throughout the set solo.	0	
Total		5
Criterion 3: Interpretation of choreographic intent (spatial clarity and movement style as intended by the choreographer)		
Performs an artistic interpretation of the set solo with spatial clarity and style that reflects the changes in structure and the choreographic intent.	4	
Performs a sound interpretation of the set solo and mostly maintains a clear connection to the choreographic intent. Performs with appropriate spatial clarity and style.	3	
Performs the set solo with intermittent connection to the choreographic intent. Performs with some spatial clarity and style.	2	
Performs the set solo with limited connection to the choreographic intent. Performs with limited spatial clarity and style.	1	
Performs the set solo with no connection to the choreographic intent. Performs with no spatial clarity or style.	0	
Total		4
Criterion 4: Musicality (rhythmic accuracy, embodiment of choreography)		
Displays a strong sense of rhythmic accuracy and clearly and consistently embodies the choreography through the contrasts in the music. Sustains accurate timing of specific movements within the set solo.	3	
Displays some rhythmic accuracy and/or embodies most of the choreography through the contrasts in the music. Shows minor inconsistencies with timing of specific movements within the set solo.	2	
Displays minimal rhythmic accuracy, limited musicality and incorrect timing of movements within the set solo.	1	
Displays inadequate rhythmic accuracy and lack of musicality throughout the set solo.	0	
Total		3
Criterion 5: Presentation (confidence, engagement, projection, focus, commitment)		
Presentation skills are sustained throughout the set solo. Performance is confident, committed and focused.	4	
Presentation skills are mostly sustained throughout the set solo. Performance is mostly confident, committed and focused.	3	
Presentation skills in some sections of the set solo are inconsistent. Some sections of the performance lack confidence, commitment and focus.	2	
Overall performance lacks confidence. Limited commitment and focus throughout set solo. Movements are largely marked rather than fully performed.	1	
No attempt at presentation.	0	
Total		4
Criterion 6: Performance accuracy (significant omission/changes in choreography)		
Performs the choreography of the set solo with no errors.	3	
Performs the choreography of the set solo with minor errors.	2	
Performs the choreography of the set solo with significant errors.	1	
Does not complete the choreography of the set solo.	0	
Total		3

Performance 3: Structured improvisation

10% (10 marks)

Description	Marks
Criterion 1: Ideas and movement choices in responding to task (exploration of movement, intent, sequencing of movement and decision-making process, compositional tools, clear structure)	
Successfully completes the task. A clear trajectory (structure), decision-making process and development of ideas relating to concept from start to end. Uses choreographic devices and contributes a personal and imaginative exploration of movement and response.	5-6
Adequately completes the task. A competent use of choreographic tools and logical structure. Rearranges known movement relevant to the set task. Movement choices reflect an understanding of the concept of the task	3-4
A limited and or partial attempt at completing the task. A limited use of choreographic tools and structure. Rearranges known movement without expanding movement potential.	1-2
Makes no attempt to respond to the task and/or does not meet the minimum time requirements.	0
Total	6
Criterion 2: Confidence, commitment and creativity in performance	
Presents an engaging performance with confidence and commitment.	4
Presents a confident and committed performance.	3
Presents a mostly confident performance.	2
Presents a performance that lacks confidence.	1
Makes an inadequate attempt at the task.	0
Total	4

Interview

5% (10 marks)

Description	Marks
Criterion 1: Response	
Critically, and with some insight, analyses characteristics and personal qualities of own dance and processes relevant to the questions.	5-6
Describes, with some analysis, characteristics and qualities of own dance and processes relevant to the questions.	3-4
Briefly and/or generally describes own dance processes relevant to the questions.	1-2
Very briefly talks about own dance and/or processes.	0
Total	6
Criterion 2: Dance terminology and language	
Effectively uses a range of appropriate dance terminology and language in responses.	4
Uses a range of appropriate dance terminology and language in responses.	3
Uses some appropriate dance terminology and language in responses.	2
Limited use of dance appropriate terminology and language in responses.	1
No use of dance terminology and language in response.	0
Total	4

Appendix E – Student Survey

	ID <input style="width: 100px; height: 20px;" type="text"/>
STUDENT SURVEY – Digital Enhancement of Dance Assessment	
<p>This survey is part of research being conducted by Edith Cowan University (ECU) as part of a PhD.</p>	
Disclosure Statement	
<p>Your responses will be strictly confidential, only the ECU evaluation team members will see your particular responses. The information will be collated with no reference to individuals and no identifying information for reports to the school and teachers at the school. Such reports will only include general and summary information and will in no manner identify individual or groups of students or teachers.</p>	
Instructions to Students	
<p>Please do not write your name on the survey sheet. Put your ID code on the sheet, only this will be recorded and known only to the research team. The ID code will maintain the confidentiality of your responses and also provide a way of re-identifying your data if you choose to withdraw from the project.</p>	
<p>To ensure maximum confidentiality all the questionnaires from your class will be placed in a sealed envelope to be returned to Edith Cowan University. Therefore no one at your school will see your questionnaire.</p>	
<p>It should take you about 15 minutes to answer the questions but take as long as you need.</p>	
<p>Some items require you to CIRCLE or TICK an alternative while others provide the opportunity for you to write brief responses (note form is OK).</p>	
<p>Example</p> <p>(a) I like going to school. <input checked="" type="radio"/> Often <input type="radio"/> Some <input type="radio"/> Rarely <input type="radio"/> Never</p>	
CAREFULLY ANSWER THE QUESTIONS ON THE FOLLOWING PAGES	

STUDENT SURVEY – Digital Enhancement of Dance Assessment

Digital technologies include: computers, laptops, smart technology, digital cameras, audio recording, scanners etc.

Please circle ONE response for each row.

Gender (circle): **Male / Female**

Doing exams using digital technologies

- | | | | | | |
|--------|---------------------------------------------------------------------|-------------|-------------|---------------|-------------|
| 1. (a) | How often have you done an exam or test using digital technologies? | Lots | Some | Little | None |
| (b) | How much more time would you need to get used to it? | Lots | Some | Little | None |

Doing the Structured Improvisation and Interview sections (parts 3 and 4) of the practical dance assessment

- | | | | | | |
|--------|---------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|-----------------|--------------------------|
| 2. (a) | It was easy to use digital technologies for the structured improvisation assessment task | Strongly agree | Agree | Disagree | Strongly disagree |
| (b) | The videos and commentary were a good way of showing my performance for the assessment tasks. | Strongly agree | Agree | Disagree | Strongly disagree |
| (c) | Digital technologies were useful tools for me to reflect on my practical performance. | Strongly agree | Agree | Disagree | Strongly disagree |
| (d) | Digital technologies were useful tools for me to improve my practical performance. | Strongly agree | Agree | Disagree | Strongly disagree |
| (e) | Digital technologies were useful tools for reflecting on my progress. | Strongly agree | Agree | Disagree | Strongly disagree |
| (f) | Digital technologies were useful tools for explaining my creative choices and processes. | Strongly agree | Agree | Disagree | Strongly disagree |
| (g) | It was easy to follow the steps of the assessment task using the smart technology | Strongly agree | Agree | Disagree | Strongly disagree |
| (h) | The steps of the videoed section of the assessment task helped me to show my ability. | Strongly agree | Agree | Disagree | Strongly disagree |
| (i) | Overall, digital technologies are good tools for the dance assessment task. | Strongly agree | Agree | Disagree | Strongly disagree |
| (j) | Overall, I was able to show what I can do in the assessment task. | Strongly agree | Agree | Disagree | Strongly disagree |
| (k) | Overall, it was better doing the dance assessment task using digital technologies than being interviewed by an examining panel. | Strongly agree | Agree | Disagree | Strongly disagree |

3. The two best things about doing parts 3 and 4 of the practical dance assessment using digital technologies:



4. The two worst things about doing parts 3 and 4 of the practical dance assessment task using smart technologies:



5. Marking using smart technology

- | | | | |
|--------------------------------------------------------------------------------|-----|----------|----|
| a) Marking my own performance using the app is a useful reflective tool | YES | Not Sure | NO |
| b) Marking my peers performance using the app is a useful tool | YES | Not Sure | NO |
| c) It was easy to mark the performances using the technology | YES | Not Sure | NO |
| d) I like marking my performances using the app | YES | Not Sure | NO |
| e) I like marking my peers performances using the app | YES | Not Sure | NO |
| f) Using the app for marking helped me to understand how I can improve my work | YES | Not Sure | NO |
| g) It is fair for dance assessments to be marked by more than 2 examiners | YES | Not Sure | NO |

6. The two best things about the marking of practical dance assessments using smart technologies:



7. The two worst things about the marking of the practical dance assessment task using smart technologies:



ICT and Dance

8. Do you, or would you, use digital smart technologies to do the following for dance? (circle ONE for each)

- | | | | |
|---------------------------------------------------------|------|---------|----|
| (a) Written assessments. | I do | I would | No |
| (b) Draw a diagram or picture. | I do | I would | No |
| (c) Type an assignment for school. | I do | I would | No |
| (d) Research as part of an assignment. | I do | I would | No |
| (e) Practical assessments | I do | I would | No |
| (f) Use social media sites like, Facebook, Twitter etc. | I do | I would | No |
| (g) Analyse technique and performance | I do | I would | No |
| (h) Analyse choreography | I do | I would | No |
| (i) Create choreography | I do | I would | No |
| (j) Staging and design | I do | I would | No |

9. Circle YES or SOMETIMES or NO to show whether you agree with each of the following statements.
- (a) Using digital technologies in dance is difficult **YES** or **SOMETIMES** or **NO**
 - (b) I enjoy using digital technologies **to enhance learning in dance** **YES** or **SOMETIMES** or **NO**
 - (c) I like to use digital technologies **at home** to do dance work. **YES** or **SOMETIMES** or **NO**
 - (d) I enjoy using digital technology to reflect on past assessments. **YES** or **SOMETIMES** or **NO**
 - (e) Digital technologies are good for supporting practical dance assessments. **YES** or **SOMETIMES** or **NO**
 - (f) I feel ok about being videoed in dance, to support learning and assessment **YES** or **SOMETIMES** or **NO**

10. Circle either "YES", "Not Sure" or "NO".
- (a) I feel confident working with digital technologies in dance. **YES** **Not Sure** **NO**
 - (b) I'm good at using digital technologies in dance YES **Not Sure** **NO**
 - (c) I feel OK about trying a new problem with technologies in dance. **YES** **Not Sure** **NO**
 - (d) I usually do well with digital technologies for dance YES **YES** **Not Sure** **NO**
 - (e) I would like to use technology more in dance to support my learning **YES** **Not Sure** **NO**
 - (f) I would like to use technology more in dance to support assessment **YES** **Not Sure** **NO**

11. The two best things about the usual practical dance assessment:



12. The two worst things about the usual practical dance assessment:



Digital Forms of Assessment

Looking back on the **Dance assessment task and activities** that you did, we would like you to share your experiences of working on the assessment tasks to be incorporated into our research report. Your comments will be attributed anonymously

What did **you** think of the task(s) you were asked to do?

What did the **other students** think of the task(s)?

Where you able to do your best **quality** of work? Did the **digital technologies** help?

How much different was this to **how it used to be done (parts 3 and 4 of the dance assessment)**?

What, if anything, would you like **changed** in future?

Were there any **technical problems** with doing the activities?

Were there any **other problems** with the activities?

Appendix F – Student Focus Group Questions

What did **you** think of the task(s) you were asked to do?

What did the **other students** think of the task(s)?

Were you able to do your best **quality** of work? Did the **digital technologies** help?

How much different was this to **how it used to be done (parts 3 and 4 of the dance assessment)**?

What, if anything, would you like **changed** in future?

Were there any **technical problems** with doing the activities?

Were there any **other problems** with the activities?

Any other thoughts or suggestions for developing the use of digital forms of assessment?

Appendix G – Marker Survey

ID

Marker SURVEY – Digital Enhancement of Dance Assessment

This survey is part of research being conducted by Edith Cowan University (ECU) as part of a PhD.

Disclosure Statement

Your responses will be strictly confidential, only the ECU evaluation team members will see your particular responses. The information will be collated with no reference to individuals and no identifying information for reports to the school and teachers at the school. Such reports will only include general and summary information and will in no manner identify individual or groups of students or teachers.

Instructions

Please do not write your name on the survey sheet. **Put your ID code on the sheet**, only this will be recorded and known only to the research team. The ID code will maintain the confidentiality of your responses and also provide a way of re-identifying your data if you choose to withdraw from the project.

To ensure maximum confidentiality all the questionnaires will be placed in a sealed envelope to be returned to Edith Cowan University. Therefore no one at your school will see your questionnaire.

Some items require you to CIRCLE or TICK an alternative while others provide the opportunity for you to write brief responses (note form is OK).

Example

(a) I like going to school.

Often Some Rarely Never

CAREFULLY ANSWER THE QUESTIONS ON THE FOLLOWING PAGES

Digital technologies include; computers, laptops, smart technology, digital cameras, audio recording, scanners etc.

Please circle ONE response for each row.

Gender (circle): **Male / Female**

1

Doing exams using digital technologies

- | | | | | |
|-----------------------------------------------------------------------------------------------|-------------|-------------|---------------|-------------|
| 1. (a) How often have you done an exam or test using digital technologies with a dance class? | Lots | Some | Little | None |
| (b) How much more time would you need to get used to it? | Lots | Some | Little | None |

Digital marking of the practical dance assessment using the smart technology - app

- | | | | | |
|--------------------------------------------------------------------------------------------------|-----------------------|--------------|-----------------|--------------------------|
| 2. (a) It was easy to use digital technologies for the structured improvisation assessment | Strongly agree | Agree | Disagree | Strongly disagree |
| (b) The videos and commentary were a good way of enhancing assessment tasks 3 and 4 (modified). | Strongly agree | Agree | Disagree | Strongly disagree |
| (c) Digital technologies are useful tools for me to reflect on students' practical performances. | Strongly agree | Agree | Disagree | Strongly disagree |
| (d) Digital technologies are useful tools to improve practical performances. | Strongly agree | Agree | Disagree | Strongly disagree |
| (e) Digital technologies are useful tools for reflecting on student progress. | Strongly agree | Agree | Disagree | Strongly disagree |
| (f) Digital technologies are useful tools for explaining creative choices and processes. | Strongly agree | Agree | Disagree | Strongly disagree |
| (g) It was easy to follow the steps of the assessment using the smart technology | Strongly agree | Agree | Disagree | Strongly disagree |

(h)	The videos of the performances helped to show student ability.	Strongly agree	Agree	Disagree	Strongly disagree
(i)	Overall, digital technologies are good tools for supporting the dance assessment tasks.	Strongly agree	Agree	Disagree	Strongly disagree
(j)	Overall, the students were able to show what they can do in the assessment	Strongly agree	Agree	Disagree	Strongly disagree
(k)	Overall, it was better doing the dance assessment task 4 using digital technologies than being interviewed by an examining panel (modified).	Strongly agree	Agree	Disagree	Strongly disagree

□

3. The two best things about doing parts 3 and 4 of the (modified) practical dance assessment using digital technologies:

-
-

4. The two worst things about doing parts 3 and 4 of the (modified) practical dance assessment task using smart technologies:

-
-

5. Using smart technology

Circle YES or SOMETIMES or NO to show whether you agree with each of the following statements.

- a) Students marking their own performance is a useful reflective tool
YES Sometimes NO
- b) Students marking peer performance is a useful learning tool
YES Sometimes NO

- c) It was easy to mark the performances using the technology
YES Sometimes NO
- d) I like marking performances using the app
YES Sometimes NO
- e) Students like marking peer performances using the app
YES Sometimes NO
- f) Students feel ok about other students marking performances online
YES Sometimes NO
- g) Using the app for marking helps students to prepare for their exam
YES Sometimes NO
- h) It is fair for dance assessments to be marked by more than 2 examiners
YES Sometimes NO

6. The two best things about the marking of practical dance assessments using smart technologies:

➤

➤

7. The two worst things about the marking of the practical dance assessment task using smart technologies:

➤

➤

ICT and Dance

8. Do you, or would you, use digital smart technologies to do the following for dance? (circle ONE for each)

(a) Written assessments.

I do I would No

(b) Draw a diagram or picture.

I do I would No

(c) Reports/student feedback/assignments

I do I would No

(d) Research

I do I would No

- (e) Practical assessments
I do I would No
- (f) Use social media sites like, Facebook, Twitter etc.
I do I would No

(g) Analyse technique and performance

I do I would No

(h) Analyse choreography

I do I would No

(i) Create choreography

I do I would No

(j) Staging and design

I do I would No

9. Circle YES or SOMETIMES or NO to show whether you agree with each of the following statements.

(a) Using digital technologies in dance is difficult

YES or SOMETIMES or NO

(b) I enjoy using digital technologies **to enhance learning in dance**

YES or SOMETIMES or NO

(c) I like to use digital technologies **at home** to do dance work

YES or SOMETIMES or NO

(d) I enjoy using digital technology to reflect on past assessments

YES or SOMETIMES or NO

(e) Digital technologies are good for supporting practical dance assessments.

YES or SOMETIMES or NO

(f) I feel ok about video use in dance, to support learning and assessment

YES or SOMETIMES or NO

13. Circle YES or SOMETIMES or NO to show whether you believe the developed smart technology would be useful for:

a) Moderation between schools

YES or SOMETIMES or NO

b) Examiner training

YES or SOMETIMES or NO

c) Teacher education/training

YES or SOMETIMES or NO

d) Preparation for examinations for students and teachers

YES or SOMETIMES or NO

e) Alternate examinations

YES or SOMETIMES or NO

(where usual method can't take place, e.g. due to injury)

Digital Forms of Assessment

Looking back on the **Dance assessment task and activities** that you did we would like you to share your experiences of working on the assessment tasks to be incorporated into the research report. Your comments will be attributed anonymously (e.g. as 'Marker 6').

What did **you** think of the task(s) you were asked to do?

What did the **students** think of the task(s)?

Were you able to do your best **quality** of work? Did the **digital technologies** help?

10. Circle either "YES", "Not Sure" or "NO".

(a) I feel confident working with digital technologies in dance

YES Not Sure NO

(b) I'm good at using digital technologies in dance

YES Not Sure NO

(c) I feel OK about trying a new problem with technologies in dance

YES Not Sure NO

(d) I usually do well with digital technologies for dance

YES Not Sure NO

(e) I would like to use technology more in dance to support my teaching
practice

YES Not Sure NO

(f) I would like to use technology more in dance to support assessment

YES Not Sure NO

11. The two best things about the usual practical dance assessment:

➤

➤

12. The two worst things about the usual practical dance assessment:

➤

➤

Were your students able to do their best quality of work? Did the technology help?

How much different was this to **how it used to be done**

What, if anything, would you like **changed** in future?

Were there any **technical problems** with doing the activities?

Were there any **other problems** with the activities?

Any other thoughts or suggestions for developing the use of digital forms of assessment?

Appendix H – Semi Structured Digital Marker Interview Questions

What did **you** think of the task(s) you were asked to do?

Were you able to do your best **quality** of work? Did the **digital technologies** help?

Were the students able to do their best quality of work? Did the technology help?

How much different was this to **how it used to be done**

What, if anything, would you like **changed** in future?

Were there any **technical problems** with doing the activities?

Were there any **other problems** with the activities?

Any other thoughts or suggestions for developing the use of digital forms of assessment?