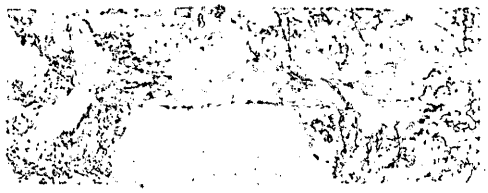
An Investigation Into the Nature and Quality of Children's Experiences of Group Composing in the Secondary Classroom Based on the Concept of Flow

Thesis



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AN INVESTIGATION INTO THE NATURE AND QUALITY OF CHILDREN'S EXPERIENCES OF GROUP COMPOSING IN THE SECONDARY CLASSROOM BASED ON THE CONCEPT OF FLOW

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Thesis submitted to the Open University for the degree of Doctorate in Education

Centre for Research in Education and Education Technology
(Education)
The Open University

October 2009

DATE OF SUBMISSION: 22 MAR 2010
DATE OF AWARD: 24 MAY 2010

THE OPEN UNIVERSITY

ABSTRACT

Centre for Research in Education and Education Technology (Education)

Doctorate in Education

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By Catherine Anne Preston

In music lessons in UK schools pupils are encouraged to develop their skills, knowledge and understanding in activities that are designed to integrate three broad areas; performance, composing and listening. Lessons are structured to include group work which has become the norm in many secondary classrooms. Collaborative musical participation generally involves pupils working together unsupervised for extended periods and gives them a high level of responsibility and autonomy to achieve the set objectives. Although many pupils have developed the musical skills, they are not always given enough guidance in how to apply them in collaborative contexts. At the same time, very little empirical research investigates the effectiveness of group work.

This thesis investigates pupils' experiences of group composing applying the concept of flow. Flow, also termed optimal experience, is 'a subjective state that people report when they are completely involved in something to the point of losing track of time and of being unaware of everything else but the activity itself' (Csikszentmihalyi, Rathunde and Whalen, 1997, pg 14). Investigating flow provides insights into the quality of experience. In the music classroom, investigating flow can provide insights into the situated nature of pupils' experiences of collaborative work. The empirical context for the research is two secondary schools in the North-West of England. A mixed-methods research design provided insights into self-reports of flow experience using the Experience Sampling Method and also involved qualitative analysis of group talk. The findings reveal how more pupils experienced flow when the main activity was group composing and that those in flow influenced the quality of talk in the group. Overall, this study contributes to increased understandings of how pupils experience music lessons and in particular, how the quality of their experience in group work can be improved by recognising and understanding the importance of 'speaking though music'.

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ACKNOWLEDGEMENTS

I would like to thank my supervisor, Professor Dorothy Miell, for providing instructive comments and evaluation during the process of developing the thesis together with the staff and participants of the two schools where I conducted the study. My thanks also go to Doctor Steven Hutchinson for his advice during the final stages of completing the thesis and preparing for the viva. I would also like to thank my partner, Andrew Field, MA, and my daughter, Doctor Anne Preston, who provided unconditional support and encouragement at all times. The thesis is dedicated to my mother, Pamela Dugdale, who has always been a source of inspiration to me.

Chapter 1

Investigating the nature and quality of children's experiences of group composing in the secondary classroom based on the concept of flow

> 'Arts advocates need to stop making sweeping claims about the arts as a magic pill for turning students around academically... Instead, arts in the curriculum should be justified in terms of their intrinsic merit – as they were in ancient Greece. An education without the arts is an impoverished education, and that leads to an impoverished society' (Hetland, 2000)

The above reflects how the arts, and particularly music, are a vital part of young peoples' creative and intellectual development and why it is just as important to focus on the quality of learning experiences as well as developing skills and expertise.

The development of young peoples' musical skills and expertise in UK schools is structured to integrate three broad areas; listening and appraising, performing and composing. To do this, practitioners are expected to organise learning through a range of practical activities and these are designed to develop their pupils' knowledge, skills and understanding. The importance of these are emphasised in music educational policy. At the same time music educational policy also recognises the social dimension of musical participation where each individual's contribution is valued. A further consideration is the way in which music has its own intrinsic rewards as the following shows:

> 'Music can influence pupils' development in and out of school by fostering personal development and maturity creating a sense of achievement and self worth, and increasing pupils' ability to work with others in a group context' (QCA, 2009).

Group work is often an integral part of music lessons in many secondary classrooms. Topics are structured in ways that enable pupils to spend time together, unsupervised, to plan and rehearse compositions they subsequently perform to each other and the teacher. The teacher assesses the quality of their music according to National Curriculum assessment criteria.

At the outset of a topic, teachers devote a lot of class time to ensuring pupils have the required musical skills but less is given to providing the necessary guidance to apply them in a group context. Pupils often need more assistance to recognise the value of collaboration in terms of the importance of the task, assigning specific responsibilities for each member and a shared focus to promote a successful outcome i.e. the composed music. This also involves emphasising the significance of the necessary social skills.

As well as what is required in terms of practice, there is a need for more empirical research that investigates the effectiveness of group work *in music*. There is a particular lack of research which focuses on musical collaboration in the context of UK educational practice *and* compulsory learning. There is also a lack of learner-centred research from the point of view of investigating the quality of pupils' experience.

The work in this thesis addresses these perceived gaps and is intended to inform current practices in music education from the perspective of flow theory. Developed by Csikszentmihalyi (1975), flow theory is primarily concerned with the quality of individual subjective experience and the ways in which it is possible to be immersed in an activity for its own sake rather than for extrinsic reward. There is some evidence that investigating music experiences through the concept of flow is a valid and appropriate approach. Currently there are initiatives and projects in music education that take this into account. The Musical Futures model (Green, 2008) is based on the understanding that pupils gain more from musical interaction when they are given more control over their learning in music lessons. They are more challenged and likely to involve themselves in music al activities in a much more meaningful way.

Flow theory is particularly appropriate for use in studying collaboration because it enables the study of individuals' experiences of their interaction in a group context. The principal measurement for flow is the Experience Sampling Method and this provides self reports of situated experiences in terms of emotional well-being, cognitive attention (i.e. concentration and involvement) and perceptions of ability.

In this study, flow is conceptualised in two ways, as the product and process of collaborative musical activities undertaken by pupils at two secondary schools in the northwest of England. As a product, flow is investigated through self reports which were analysed statistically to find out if the participants in the research experienced flow. This was done to answer the first research question:

To what extent do pupils experience a state of flow in the music classroom?

The process of flow experience is looked at through the lens of qualitative analysis of verbal and non-verbal interaction from selected episodes of group interaction. The interaction of small groups was examined whilst pupils were at the composing stage. The talk was used address the second research question:

How is group talk associated with flow experience?

The analysis of the two data types are integrated into an embedded correlational design (Creswell, 2002).

This thesis is divided into seven chapters.

Chapter 2 situates the research to provide an overview of the structure of music education in UK schools and the values underpinning the curriculum for music. The next section concentrates on flow as theoretical concept and outlines the measure for flow and the relevance of the concept for application in educational contexts. Attention is then drawn to the social dimensions of flow and some relevant research that has investigated group flow.

Chapter 3 reports more specifically on research design and methodology. Data collection, data management and transcription and quantitative and qualitative analytical procedures are outlined.

Chapter 4 presents the analysis of flow experience using the data from the self reports. The results are summarised for each week the reports were administered. Chapter 5 presents the analysis of talk which is presented for each year group at Key Stage 3.

Chapter 6 draws together the findings and identifies the most relevant in terms of the research questions and aims of the study. *Chapter 7* broadens the research to review the extent to which the research questions were answered. Implications of the research and suggestions for further study are also identified.

Chapter 2

Musical Collaboration and the Application of Flow Theory

2.1 The structure of music education in schools

Music became a statutory subject in primary and secondary state schools in England and Wales following the introduction of the National Curriculum in 1988. There are three core subjects, English, Mathematics and Science, and these are compulsory for all students aged 5 to 16. The other foundation subjects are compulsory at one or more Key Stages:

- Art & Design
- Citizenship
- Design & Technology
- Geography
- History
- Information & Communication Technology
- Modern Foreign Languages
- ***Music***
- Physical Education

A Key stage is the term used to denote the age range of pupils and is also used to denote each section of the National Curriculum guidelines that apply to each stage. The pattern is:

Foundation Stage: Reception (aged 3- 4 years) and Nursery (aged 5 – 6 years)

Key Stage 1: Years 1 and 2 (aged 5 to 7 years)

Key Stage 2: Years 3, 4, 5 and 6 (aged 7 to 10 years)

Key Stage 3: Years 7, 8 and 9 (aged 11 to 13 years)

Key Stage 4: Year 10 and 11 (aged 14and 15 years)

Sixth Form: Years 12 and 13 (aged 16 and 17 years)

The values underpinning the curriculum are given below and subject leaders are required to ensure these are integrated into programmes of study for pupils at each Key Stage. The participants in this study were all at Key Stage 3 and were aged eleven to thirteen years.

2.1.1 Values underpinning the curriculum

'Education should reflect the enduring values that contribute to personal development and equality of opportunity for all, a healthy and just democracy, a productive economy, and sustainable development. These include values relating to:

- **the self**, recognising that we are unique human beings capable of spiritual, moral, intellectual and physical growth and development
- **relationships** as fundamental to the development and fulfilment of ourselves and others, and to the good of the community. We value others for themselves, not only for what they have or what they can do for us
- **the diversity in our society**, where truth, freedom, justice, human rights, the rule of law and collective effort are valued for the common

good. We value families, including families of different kinds, as sources of love and support for all their members, and as the basis of a society in which people care for others. We also value the contributions made to our society by a diverse range of people, cultures and heritages

- **the environment**, both natural and shaped by humanity, as the basis of life and a source of wonder and inspiration which needs to be protected'. (QCA,2009)

These core values are reflected in the importance of music in the curriculum at Key Stage 3:

> 'Music is a unique form of communication that can change the way pupils feel, think and act. Music forms part of an individual's identity and positive interaction with music can develop pupils' competence as learners and increase their self-esteem. Music brings together intellect and feeling and enables personal expression, reflection and emotional development. As an integral part of culture, past and present, music helps pupils understand themselves, relate to others and develop their cultural understanding, forging important links between home, school and the wider world'(QCA, 2009)

Classroom music is designed to develop young people's understanding and knowledge by integrating three broad areas; listening and appraising, performing and composing. These areas are the central focus for teaching and learning in music as the following statement from the recommendations from the Quality and Curriculum Authority confirms:

> 'Performance, composing and listening are interrelated. Pupils should be encouraged, for example, to develop listening skills through performance and composition activities. Knowledge, skills and understanding in each of these areas should be developed interactively through practical music making'. (QCA, 2009)

To facilitate this, music teachers regularly structure their lessons to include group work and the practice has become the norm in most secondary classrooms. In the past, some educationalists have been critical of the emphasis on group composing (eg Odam 2000), perceiving a lack of progression in skill development and poor classroom organisation. However, more recent studies have indicated that collaborative music making can work successfully if teachers adopt more 'child-centred' approaches. The most influential are those conducted by Green (2002, 2006, and 2008). Her research provides evidence to support the benefits of group music-making proposing that the way young popular musicians work together outside the classroom can be applied to musical participation in schools. A number of findings contrast sharply with those from research conducted in the more formal context of the classroom. For example, it was observed that when no adults were present to direct what was to be played, decisions were made through negotiation and each member of the group was seen to be individually responsible for their level of commitment and input. A significant conclusion arising from the research is the recommendation that encouraging young people to have a greater degree of ownership and choice in their music making can influence their enjoyment, in terms of motivation and interest, of musical participation both in and out of the classroom.

Green's work has resulted in a large scale music education project entitled 'Musical Futures' (Green and Walmsley, 2006) which has had a considerable impact on approaches to music teaching in the secondary classroom. Green (2008) has provided a comprehensive account of the project and makes specific references to flow experience throughout. Of particular importance is the way in which the project focuses on group music making in UK secondary schools and the notion of 'musicking' (Green, 2008).

Recent research in music psychology has focused on the social aspects of musical participation in educational contexts to show that peer groups, musical preferences, identity and family environment all contribute to teachers' and pupils' approaches to and understanding of musical participation e.g. Miell and MacDonald (2000); MacDonald et al (2002); Tarrant, North and Hargreaves (2002). The importance of these factors is recognised by QCA:

> Music education encourages active involvement in different forms of music-making, both individual and communal, helping to develop a sense of group identity and togetherness. Music can influence pupils' development in and out of school by fostering personal development and maturity, creating a sense of achievement and self-worth, and increasing pupils' ability to work with others in a group context (QCA, 2009).

Reference made above to the importance of the social experience of music education indicates that collaborative musical participation is encouraged. In a recent report that focused on standards in music across all the Key Stages, it was noted that at Key Stage 3,

'where achievement and standards were good, students responded musically to the tasks set...They showed this in creating different kinds of music in the way they would be created in the real world and by performing musically in groups and as a whole class... They took different roles in group performances, taking the lead and providing support where appropriate'. (Ofsted, 2009, pg 23).

It was also that noted that pupils made less progress overall in Key Stage 3 than in any other of the Key Stages. The activities were seen to focus more on the development of students' technical competence and there was not enough attention on of the quality of their musical responses and the depth of musical understanding. Although this perceived lack of progress at Key Stage 3 has been noted in previous reports (Ofsted 2009), there are no clear suggestions about how this perceived lack of quality of response and musical progress should be addressed. This study investigates pupils' subjective experiences of musical participation as they occur 'in the moment'. The intention is to provide some insights that may inform current practices in music education and assist practitioners to consider how best to develop the quality of pupils' experiences in the music classroom. The theoretical basis for the research is the concept of Flow and the next section provides an overview of the origins of flow theory to show why it is appropriate for this study.

2.2 Flow as a theoretical concept

In the latter half of the twentieth century approaches to psychological research reflected a general trend in scientific inquiry that challenged the validity of experimental methods. Up to this time studies in human behaviour were rooted in a positivist, quantitative paradigm that saw 'only (numerically) measurable events as the possible objects of scientific study' (Coolican, 1999, pg 196). Research was mostly based in laboratories and focused on the development of theories which were subsequently tested through the generation of hypotheses. The move away from traditional methods arose as psychologists became increasingly concerned that the rigidity of the hypothetico-inductive approach resulted in models of behaviour and cognition that were too mechanistic and simplistic. To address these concerns, a wide range of alternative methodologies emerged within a 'new paradigm' (Harre and Secord 1972; Reason and Rowan 1981). An important aspect was that behaviour should be viewed as socially constructed and studies of behaviour should take place in more 'real life' contexts.

In general terms, new paradigm research in psychology involves qualitative methods such as open-ended questionnaires, semi-structured interviews and case studies. A major departure from traditional scientific methods is that data is studied through techniques of inductive analysis exemplified in grounded theory. However, it is important to emphasise that traditional methods have not necessarily been replaced and many researchers use combinations of both quantitative and qualitative methods of analysis to support and present their

findings. In this study, the results from the qualitative analysis are correlated with the statistical data to support and validate the findings.

It is against this backdrop of ideas and approaches to psychological research that Csikszentmihalyi began developing a theory of optimal experience (Csikszentmihalyi, 1969). Initially he was concerned with the relatively unexplored phenomenon of 'adult play [and] the experience of enjoyment' (Csikszentmihalyi, 1975b, pg xv) to discover why people derived pleasure from such diverse autotelic[1] activities such as painting, sculpture, dancing, rock climbing, sport or chess.

Initial research included observations of male artists (Csiksentmihalyi, 1969; Getzels and Csikszentmihalyi, 1976) and indicated that after many hours of intense concentration participants would invariably cast aside a finished piece and forget about it. Csikszentmihalyi surmised the artists' motivation and enjoyment in their work must be rooted within the activity itself (Csikszentmihalyi, 1974; Csikszentmihalyi and Csikszentmihalyi, 1988) rather than a need for external rewards such as money or fame. Around the same time, Maslow (1965, 1968) was also developing explanations for intrinsic motivation.

Although Maslow identified 'peak experiences' similar to those of being in flow, Csikszentmihalyi was not convinced that these offered a fully comprehensive explanation of intrinsic motivation in relation to enjoyment. This was because of the perceived lack of empirical evidence to support Maslow's theory. The

[1] From the Greek *auto* – self and *telos* – goal, purpose. An activity is autotelic if it is seen as worth doing for its own sake rather than for any external reward.

intention was to find a way of applying the principles of phenomenology within empirical research 'to develop a reliable measure of the events occurring in the stream of consciousness over time' (Hektner et al 2006). The basis for this approach was inspired by the philosophy of Edmund Husserl who interpreted experience and meaning 'in terms of the way in which the world differentially displays itself to different human beings from different standpoints in the world' (Keller, 1999, pg 8). An important aspect of the phenomenological perspective is the overarching aim to explore what people think and feel rather than how they behave. Of particular importance is the way in which attention is allocated in different situations which in turn determines the extent to which people are involved and intrinsically motivated.

Literature on children's play (Piaget, 1962; Sutton-Smith, 1971) and that of adults (Callois, 1958; Huizinga, 1950) gave a more appropriate theoretical basis for Csikszentmihalyi to explore how and why play is intrinsically motivated *and* enjoyable. The first flow model (reproduced in section 2.5.1, figure 2.2, page 45) was used initially to illustrate the commonalities that emerged from the results of interviews conducted by his students at Lake Forest College with members of the college sports teams, theatre group and choir. The model shows that 'the relationship between challenges and skills is one of the fundamental characteristics of an enjoyable activity' (Csikszentmihalyi, 2000). Originally described as autotelic experience, the term flow was deemed more appropriate, although not to be confused the phrase 'going with the flow' that was in common usage during in the 1960s[2]. Subsequent research in the 1970s

[2] Flow was so named because during Csikszentmihalyi's 1975 interviews several people described their 'flow' experiences using the metaphor of a current carrying them along. The concept of *flow* is unrelated to the older phrase 'to go with the flow' which generally means to conform.

provided further clarification of the dynamics of intrinsic motivation (Lepper, Greene and Nisbett, 1973; Lepper and Greene, 1975; Lepper and Greene, 1978). Their work gave a 'theoretical rationale for believing that people are motivated to act by a much wider range of rewards that traditional psychology had suspected' (Csikszentmihalyi and Csikszentmihalyi, 1988, pg 7). In other words, one's motivation to seek an enjoyable experience is not based purely on the need for some form of physical gratification - the reward is the experience itself.

There was an important difference between Csikszentmihalyi's approach and that of Green and Lepper because of the latter's reliance on research conducted in laboratory settings within a limited number of conditions rather than in naturalistic contexts. Greene and Lepper were also focusing on intrinsically motivated *behaviour* rather than *the quality of subjective experience* (Csikszentmihalyi and Csikszentmihalyi, 1988 pg 7). In order to address these differences, Csikszentmihalyi began a series of studies based on empirical research (Csikszentmihalyi, 1974, 1975a, 1975b) to provide the initial version of the flow model (Csikszentmihalyi and Csikszentmihalyi, 1988, pg 8).

Data from over 200 interviews was used for the first study on flow. Participants had spent a lot of time engaged in a range of activities that included athletics, chess, rock climbing, dancing, basketball and composing. It was concluded that a range of activities related to work and leisure can make flow happen. Having developed a model for flow, Csikszentmihalyi was concerned that the data obtained through interviews and questionnaires was not insightful enough to

catch people's experiences and feelings at any given moment. During the mid 1970s electronic pagers had begun to be used in hospitals and the technology attracted the attention of psychologists. The principal benefit was the immediacy of response – individuals could be paged randomly and/or simultaneously in a variety of activities and contexts. Csikszentmihalyi, Larson and Prescott (1977) designed a response form that people were required to complete when paged. The forms consisted of a series of open and closed questions to determine the respondent's physical and social context, activities, thoughts and feelings as well as focusing on cognitive and motivational self appraisals (Hektner et al 2006).

The first published study using the Experience Sampling Method (ESM) explored the activities and behaviour of adolescents (Csikszentmihalyi, Larson and Prescott, 1977). This provided the foundations for using the method in a range of psychological research within the sociocultural paradigm, a fundamental principle of which is the 'exploration of the *interaction* of the individual with the environment' (Hektner et al 2006, pg 15). More about how the method has been applied in educational contexts will be discussed later in this chapter.

Following the introduction of the ESM, flow based research initially focused on the 'psychological and sociological implications of free time' (Csikszentmihalyi and Csikszentmihalyi, 1988; pg 8). Studies conducted in the areas of work and play (eg Sutton-Smith 1979; Ingham, 1986) provided evidence to suggest that the distinction between work and leisure is not always obvious because people reported experiencing greater rewards and enjoyment from their jobs than from

their free time (Csikszentmihalyi and Csikzsentmihalyi, 1988; pg 9). The notion of enjoyment is central to flow experience and researchers have sought to show that the dynamics of the experience are the same despite differences in culture (Sato, 1988 and Massimini et al, 1988 in Csikszentmihalyi and Csikzsentmihalyi, 1988). Sato looked at people participating in daredevil motorcycle rides to note that the skills and challenge of a run are contrasted with those needed for rock climbing as the latter activity is more likely to involve higher levels of physical and intellectual input. This point highlights two important aspect of flow. Firstly, individuals can regulate their own levels of flow experience and secondly, some activities are more flow producing than others.

The following explains this:

> *'Activities that reliably produce flow experiences are similar in that they provide opportunities for action which a person can act upon without being bored or worried...when a person is bombarded with demands he or she feels unable to meet, a state of anxiety ensues. When the demands for action are fewer, but still more than the person feels capable of handling, the state of experience is one of worry.*
> (Csikszentmihalyi, 1975, pp. 49-50).

For Csikszentmihalyi, this exploration focused on the work of Massimini (Massimini and Calegari, 1979; Massimini and Delle Fave, 1991) who was developing a systematic theory of cultural evolution during this time (Csikszentmihalyi, 2000, pg xxii). Della Fave (2006 in Hektner et al 2006)

identified three broad areas which provide the theoretical basis to illustrate how the ESM has been used for studying subjective experience:

- biology, culture and daily behaviour
- subjective experience in context
- experience fluctuations, well being and development

ESM has been applied to look at how people report their experiences whilst involved in such everyday activities as sleeping, eating and relaxing. Of particular interest is the notion of psychic negentropy as 'people tend to replicate optimal experience more often relative to other experiences in order to maintain an ordered state of consciousness'[3], (Massimini, Csikzsentmihalyi and Della Fave, 1988, pg 60). Thus, the elements that produce flow, intense involvement, clear goals and the right balance of challenge and skills have been found to be features in cross-cultural studies using the ESM to ascertain how people in different cultural contexts experience daily life.

2.2.1 Flow and the Balance of Challenge and Skill

To explore the extent to which optimal experience contributes to understanding cultural evolution, Csikszentmihalyi, Massimini and Delle Fave (1986) conducted a cross cultural study of over 600 participants from a wide range of cultural backgrounds. The participants came from Italy, America and Thailand

[3] Csikszentmihalyi (1988) refers to flow as psychic negentropy which is experienced 'when all the contents of consciousness are in harmony with each other and with the goals that define the person's self (page 24). The opposite state is psychic entropy, 'a condition in which there is "noise" in the information-processing system. It is experienced as fear, boredom, apathy, anxiety, confusion, jealousy and a hundred other nuances, depending on the nature of the information and the kinds of goals the information is in conflict with' (page 22).

and included white collar workers, college students, farmers, former drug addicts, dancers, nuns and blind lay religious persons.

Two important findings emerged: firstly, there was 'an underlying sameness in the phenomenology of this [flow] experience' (Csikszentmihalyi, Massimini and Delle Fave, 1988, pg 60) and secondly, the range of activities had the potential to influence cultural evolution. It is the first of these findings that is most relevant for this study. The evidence for the underlying similarities of flow experience was derived from comparisons of responses from interviews and flow questionnaires. An example of the findings, reproduced below, shows the percentage of activities participants identified as primary sources of flow. The activities included work, studying, reading, prayer and meditation, music and sport.

Table 2.1 indicates that the activity itself was sufficient for the onset of optimal experience. For the experience to be sustained, the activity itself was also regarded as most important together with the growth of complexity, defined as the extent to which individuals become intrinsically motivated to attain higher levels of challenge and skill in the course of their efforts to stay in flow. The growth of complexity is a very important aspect in studying flow experience in the music classroom because it is important to understand that pupils in flow are seeking higher levels of skill and challenge in order to sustain the experience.

How Does the Experience Start?	Percentage of Answers %	What Keeps it Going?	Percentage of Answers %
The activity itself	41	The activity itself	26
Concentration	13	Growth of complexity	13
Challenges	9	Intrinsic motivation	12
Intrinsic motivation	9	Environment	11
Positive mood	7	Positive mood	11
Environment	7	Skills	10
Skills	6	Concentration	6
Positive feedback	3	Challenges	4
Other	3	Positive feedback	4
Growth of complexity	2	Other	3
	100		100

Table 2.1: Answers to the Flow Questionnaire concerning the onset and the continuation of the flow experience (N=636) (Massimini, Csikszentmihalyi and Della Fave, 1988)

The following examples from the interviews illustrate how this was articulated:

It starts when I feel like I am constructive and creative, when I am about to create a new product (Navajo- silversmithing)

I feel serious and involved when confronting new complexities and hoping to be successful (Walse farmer – playing the clarinet or saxophone)

The only thing I do is study…I compare what I've learned with reality, and see how it works (Ex-addict – studying)

The place is the most important stimulus: for instance when I am in a train, alone in the compartment…I will automatically tune out and start thinking. The train is one example, and the most frequent one, but an empty waiting room will so as well (Turin student – thinking).

(Examples taken from Massimini, Csikszentmihalyi and Della Fave, 1988; page 69/70)

The finding that flow-producing activities have the potential to influence cultural evolution is supported by the large number of respondents who identified flow experience during work, whilst studying and reading. The emphasis on these activities was seen as reflecting their preference for enjoyment through the challenge of hard work and self-discipline, interaction with the environment and productive and creative activity. It is these elements that will be considered in determining which activities are the most flow-producing in the context of the music classroom.

The implications of this for socio-cultural approaches to investigating the relationship between flow and creativity are that 'flow occurs when there is a good psychological fit or mediation between 'extrasomatic' (outside the self) cultural opportunities for action and 'intrasomatic' (inside the self) biological predispositions (Rathunde, 1988, pg 360). This is what is meant by the balance of challenges (extrasomatic) and skills (intrasomatic). Flow occurs when challenges and skills are high and in balance. To maintain and sustain the experience, the dimensions of both need to increase and become more complex. For Massimimi et al, the generation, acceptance and transmission of new artefacts was characterised by intense concentration, intrinsic motivation, the environment, positive mood and high levels of challenge and skill, all of which correlate with Csikszentmihalyi's research into what constitutes flow. It is these features that have attracted the attention of psychologists to apply flow theory in educational contexts to investigate intrinsic motivation (eg Schwienle, Meyer and Turner (2006) and socio-cultural approaches to creativity (Wong and Csikszentmihalyi, 1991; Csikszentmihalyi, 1996; Loveless, 2002; Rathunde and Csikszentmihalyi, 2005). Much of the research uses the Experience Sampling

Method referred to earlier. The next section provides the theoretical foundations for the method.

2.3 Measuring Flow

The theoretical basis of Experience Sampling Method is rooted in the principles of social science research which can be broadly explained as the investigation of human experience in terms of the interaction of the individual with the environment. There are many theoretical questions within this area of inquiry and those that have been directly addressed by the ESM are:

- 'What is the impact of biological and cultural inheritance on human behaviour?
- What is the relationship between psychological processes and cognitive brain functions?
- What is the role of individuals in their interaction with the natural and cultural environment?' (Hektner et al, 2006, pg 15)

The focus for this study relates to the last of these questions and a brief overview of the research that is associated with how individuals interact with their environment follows.

Self Actualisation Theory

Csiksentmihalyi drew on Maslow's (1968) concept of self actualisation, introduced to account for the way in which an individual perceives and realises his or her potential. The most important aspect is the need for complexity as an

individual becomes more intrinsically motivated to attain higher levels of challenge and control to achieve more complex goals. This is similar to the flow state which is characterised as 'an autotelic experience...a merging of action and awareness' (Csikszentmihalyi, 1975). Both concepts are concerned with 'in the moment experience': how individuals feel in control their environment in order to reach maximum fulfilment. When this is achieved, there is a loss of self consciousness and the following extract, from one of a series of interviews Csikzenmihalyi (1975) conducted with rock climbers, articulates how this can occur:

> 'One tends to get immersed in what is going on around him, in the rock, in the moves that are involved...search for the handholds...proper position of the body- so involved he might lose the consciousness of his own identity and melt into the rock' (pg 43)

Self Determination Theory

Deci (1975) and more recently, Deci and Ryan (1985), provide further theoretical support for the focus on intrinsic motivation and the individual's relationship with the environment.

The most significant relationship between flow theory and Deci's (1975) initial work on self-determination theory is the focus on matching skills to challenges, 'the need for competence and self-determination includes behaviours which are intended to conquer challenging situations' (Deci, 1975, pg 57). Deci and Ryan (1985) have developed this further to propose that individuals are intrinsically motivated towards gaining competence in specific domains to develop and expand 'a creative and autonomous reaction with the environment and well-

being' (Hektner et al 2006 pg 24). It has also been suggested that extrinsic rewards can undermine quality of performance in intrinsically motivated activities (Deci, Koestner and Ryan, 1999).

Self Actualisation and Self Determination theory are both relevant to flow because they are concerned with self- selected goals to support personal growth and include notions of autonomy and creativity. Furthermore, they are relevant to the ESM as it is designed to measure experience as it happens i.e. the ESM is context-dependent and therefore not suitable for retrospective accounts of experience.

The method is suited to this research because individuals' responses to different types of musical activity are measured in order to explore which are more flow-producing i.e. which activities are more likely to encourage/generate self-selected goals for personal growth *in music* and develop and expand *a creative and autonomous reaction with the environment (i.e. the music classroom).*

Findings from ESM studies and interview reports indicate that optimal experience occurs when certain conditions are present. The most significant are that the person has clear goals and receives immediate and unambiguous feedback. The conditions coincided with participants experiencing high levels of challenge and skill. Studying flow within educational contexts has revealed similar findings. Next area reviews research that has used applications of the ESM in educational contexts including music.

2.4 Flow and its Relevance to Education

A range of studies that have used flow theory in educational contexts are now reviewed to show how they are relevant to theory, method, findings or implications for the current research. In each case, the research has provided useful insights into pupils' subjective experience in real life classrooms.

Turner, Cox, Di Cintio, Logan and Thomas (1998) focused on involvement (during mathematics lessons) and used the ESM to look at the relationship between the quality of students' experiences and instructional practices. The principal research question was 'what combination of challenges and skills can be accommodated in a school room...[in order to] maximise flow engagement for as many people as possible?' (pg 732).

In posing this question, Turner et al make a distinction between involvement and engagement to propose that 'involvement differs from engagement in that the focus is not on volition and activity' (pg 731). In other words, involvement is more about cognitive activity (i.e. concentration and intrinsic motivation) and quality of experience than 'doing things', which is what is often meant by engagement. Involvement is defined 'as the perception that the challenges afforded by the instruction and students' skills were both high and fairly balanced' (pg 742). The study investigated a contextually dependent quality of experience similar to the 'in the moment' experiences which are typically associated with flow. To do this discourse analysis was integrated into the study to find out if teachers used particular strategies to promote and maintain involvement during whole class lessons. It was found that the primary feature of

successful involvement, where pupils reported feeling more supported and intrinsically motivated during class lessons, occurred when teachers used a wider range of scaffolding techniques. This feature reflects the social dimension inherent in theoretical considerations of motivation and flow research; that the processes of teaching and learning are socially constructed. Where students reported higher levels of involvement, it was observed that the discourse of the class teacher showed more scaffolded instruction to encourage intrinsic motivation, self confidence and had 'supported student learning *cognitively* through negotiating, or balancing students' knowledge and skills with the challenges of new understandings and by transferring responsibility for learning to them' (pg 744).

Turner et al recommend that future research should evaluate pupils' self reports of classroom experience when working together in small groups or in other contexts where no teacher is present. They also noted that adding the observational component was particularly important to explore in more depth the integration of the individual viewpoint with the social perspective for studying involvement (pg 744). The implications of this for the current study will be to consider the findings in terms of how pupils' quality of experience in music lessons are related to the extent to which they generate challenge and provide opportunities for independent learning.

Egbert (2003) has also applied the principles of flow theory to the classroom context to provide a model, reproduced in Figure 2.1, to illustrate the interplay between individuals and the classroom context.

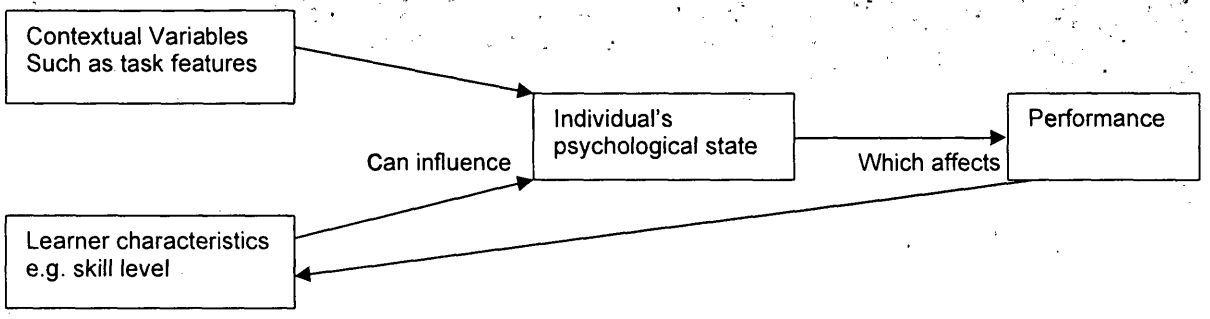


Figure 2.1: Egbert's (2003) Simplified Model of Flow and learning

Although Egbert's model does not refer to the flow state specifically, the concept is implied with reference to the individual's psychological state. It provides a starting point to illustrate perceived connections between flow and language learning by drawing attention to the relationship between the individual's psychological state (i.e. flow experience), learners' skills (learner characteristics) and the learning context (contextual variables). These are explained by Egbert as follows: 'Although flow is something individual's experience, it does not occur in isolation; rather, it depends on both individual characteristics and conditions in the environment. It may even depend on other participants in the environment' (Egbert, 2003, pg 500). The most important feature of Egbert's model is the cyclical nature of subjective experience and the way it shows how collaborative learning contexts have the potential for generating flow. This theoretical view has important implications for studying flow in the current study because the ESM is designed to highlight the relationships illustrated in Egbert's model.

Shernoff, Csikzsentmihalyi, Schneider and Steele-Shernoff (2003) have looked at pupils' classroom experiences to suggest that students are more engaged in lessons where they perceive themselves to have control and regard the classroom activities to be personally relevant. These instances occurred when

challenge and skill were balanced. Students reported that they were more engaged during individual and group work and the quality of their experience was 'associated with a psychological state similar to flow experience, in which concentration, enjoyment and interest were all high' (pg 173).

Schweinle, Meyer and Turner (2006) applied the ESM to investigate how students' perceptions of challenge and skill were related to affect (affect refers to both fleeting emotions and more stable moods to describe students' feelings in class). Schweinle et al draw attention to the close relationship to flow theory and the study of involvement based on and the work of Reed and Schallert (1993). They identify two major components. The first is deep concentration, facilitated by focused attention, moderate task difficulty and perceptions of task importance and the second is an increase in students' understanding and goals. This was related to flow in terms of perceptions of clear goals based on positive feedback, focused attention, concentration, balance of challenge and skills. The studies reviewed to this point show how flow theory and the ESM has been applied to study key areas of pupils' experience in terms of intrinsic motivation, involvement and affect. However, these are restricted to subjects where there are generally less opportunities for group work than in music classrooms.

Custodero (1997) applied Csikszentmihalyi's model to study flow by adapting the ESM for use as an observational technique to study the quality of young children's musical experiences. This marked a major shift from using self-reports because the ESM is designed for older participants who have the abilities to read and write easily. It was made possible by gathering data from video recordings of a range of activities that were used to for event sampling. The events were drawn from activities that included singing, keyboard playing, rhythm and skill games, storytelling and writing and Flow Indicators in Musical

Activities (FIMA) forms were completed for each child based on Csikszentmihalyi's (1988) original form to observe mood and behaviour. Events were 'coded by two raters and analysed for interrater agreement and inter-item consistency' (Custodero, 1997; pg 74).

Mood and behaviour were categorised in terms of Affective and Behavioural measures. The Affective dimensions were rated using a 7-point semantic differential scale and the Behavioural dimensions were rated on a 10-point Likert scale. The means for the descriptive data were correlated with the independent measure, 'Was the child in flow?', to indicate that positive affect and perceived high levels of skill and challenge were significant predictors for optimal experience. Flow was assessed by the coders as:

'The child is focused and absorbed in the present event. Gaze is usually attentive on the facilitating person or object. However, when a physical manipulation is not a task defining element, a less focused gaze may reflect a 'working out' – a personalising or 'taking ownership' of the less tangible event. Affect is often positive and sometimes neutral, within varying levels of intensity usually reflective of personality differences. It is never negative. At the completion of the event there is usually a heightened observable affect due to awareness of success. There may be a desire to share that awareness with a nearby significant other. There is a level of obliviousness to one's physical condition. Physical movement toward the facilitating person or material is common'. (Custodero, 1997, pg 68)

Subsequent exploratory research using ESM (St John; 2004, Custodero, 2005) confirmed its potential for use as an observational tool for the study of musical development across a range of age groups and settings. The transition from FIMA to R-FIMA (Revised Flow Indicators in Musical Activities Form) came about as a result of revisions made to the first FIMA (Custodero, 2005). The revised version was first used by St John (2004) in a statistical study to observe collective music making and collaboration in early childhood. The re-designed form provided more comprehensive data regarding the musical behaviour of four groups of children whose ages ranged from seven months to eight years old to explore the how the behavioural indicators functioned according to age. Based on the degree of variation and complexity in the behaviour observed, the 10-point behavioural scale was re-organised into five-point scale and the eight independent measures from the original form were grouped into three areas, *Challenge-Seeking Behaviors, Transforming Behaviors* and *Social Behaviors.* The independent measure , "Was the child in flow", was retained as the principal measure for flow. The trends, combined with those from the initial study (Custodero, 1997), were summarised to provide a 'developmental trajectory' for all of the dependent measures and is reproduced below, on the following page:

Flow Indicator	Developmental Trajectory
Self-Assignment	Infants < Toddlers < Pre-School Aged > School Aged
Self-Correction	Infants < Toddlers < Pre-School Aged < School Aged
Gesture	Infants → Toddlers → Pre-School Aged → School Aged
Anticipation	(Infants) < Toddlers → Pre-School Aged → School Aged
Expansion	Infants < Toddlers < Pre-School Aged → School Aged
Extension	Infants < Toddlers → Pre-School Aged > School Aged
Adult Awareness	Infants → Toddlers → Pre-School Aged →School Aged
Peer Awareness	Infants < Toddlers < Pre-School Aged < School Aged

Note: Developmental Trajectory
< = the indicator is becoming more observable
> = tapering off of observable behaviour
→= indicator is fully observable and maintained
Mean age: Infant = 14 months, Toddler = 2.5 years, Pre-School = 5.2 years, School Age = 6.3 years

Table 2.2: Hypothesised Developmental Trajectory for Flow Indicators (Custodero, 2005)

Although not intended as conclusive, the developmental trajectories in the sample provide a starting point to consider how flow-related behaviours may reflect general development trends. In Table 1, the challenge seeking indicators of self-assignment, self-correction and gesture were found to be most observable in the infant, toddler and preschool groups. Such behaviours are often associated with play and have been the focus for studying how young children enjoy learning new skills. In this study, infant children were observed putting scarves over their faces because they wanted to do the 'Peek-a-boo' song learned in an earlier session (Custodero, 2005, pg 197). Thus they engaged in an activity because of the 'sheer delight (they) obtain from mastering new skills' (Siegler, 1991; pg 34).

The way in which the children used transforming behaviours in the form of challenge-monitoring strategies to maintain flow was also seen as indicative of developmental trends and these were observable and maintained throughout the sample. Examples in the school age group include expansion - creating new

rhythmic movements, extension - continuing to play or practice a piece of music after the teacher said it was finished and anticipation - anticipating the correct posture for playing the violin. As before, these self-initiated behaviours reflect interpretations of development that see children as 'active agents in their own learning' (Custodero, 2005, pg 188).

The third group of flow indicators, Social behaviours, are defined as 'any observable interactions which involve prolonged gaze, head turning or physical movement toward another person. *Attempts to engage another person physically or verbally are especially noteworthy'* (Custodero, 2005. pg 193). These were observable throughout the sample and increased with age. In the infant group children copied the movements of adults when playing instruments. They were also observed making eye contact with those around them and using gesture to elicit responses. In the school-aged group peer awareness was more evident as a child was seen matching movements with those nearby. The study suggests several pathways for more in-depth exploration of the social interactions that facilitate flow. The influence of peers was also found to be indicative of musical engagement by St. John (2004). The R-FIMA provided a clearer focus on the importance of the social context in children's music learning and the extent to which collaboration in music activities contributes to optimal experience.

The research reviewed so far has shown that there are approaches to studying collaboration based on flow in a range of curriculum subjects including music. However, there is a perceived gap as much of this research has been conducted in American schools. The only ones to have used the ESM as an

observation instrument in music focused on the musical behaviour of very young children. Findings suggest that this has the potential as an important area for research and supports the theoretical basis for this study to use the ESM to study the nature and quality of musical participation in older children. The next section reviews research that has applied flow theory to investigate flow in group situations involving adults and teenagers.

2.5 The Social Dimensions of Flow

2.5.1 Group Flow

As this research is concerned with investigating young people's quality of experience in collaborative contexts, two studies that have sought to study the flow in group situations will now be discussed.

The first to be reviewed was conducted by Sato (1988) and investigated flow in Japanese motorcycle gangs, the *bosozoko.* The literal translation of *bosozoko* is 'violent-driving tribe' or 'out-of-control tribe' (Sato, 1988: pg 92). Gang members were mainly young men aged between 15 to 21 years old. Sato wanted to investigate the reasons why the riders enjoyed participating in a run, unconvinced by accounts that attributed their activities to simply a love of 'speed and thrills'. Data was obtained through semi-structured interviews, questionnaires and observation of several *bosozoku* runs. During the interviews, group members were asked questions about flow and their responses were recorded and transcribed.

The experiences reported by the participants reflected the characteristics of flow (Csikszentmihalyi, 1975, pp 38-48). The accounts showed they experienced loss of self consciousness, enjoyment and felt in control and were totally absorbed and focused throughout. Clear goals and unambiguous feedback were evident in the descriptions of signals and gestures between the members as they attained high speeds and attracted the attention of onlookers in the busy streets where the runs took place.

Sato's study was the first to introduce the notion of group flow (Csikszentmihalyi and Csikszentmihalyi, 1988). Gang members reported friendship and companionship as the most rewarding aspect of their enjoyment during a run and this is allied to the notion of communitas, 'a total, unmediated relationship between person and person' similar to the relationships that occur in rituals, festivals and carnivals. Sato also proposes that the ordered, exciting and organised structure contributed to creating and maintaining 'the play-like definition of the run' (Sato, 1988, pg 113).

An important element of achieving a state of flow is to sustain a high balance of challenge and skill. Sato draws attention to this aspect for two reasons. Firstly, the challenge of a run is somewhat unpredictable because of the unforeseeable risks inherent in riding at high speed and secondly, the skills involved are relatively limited.

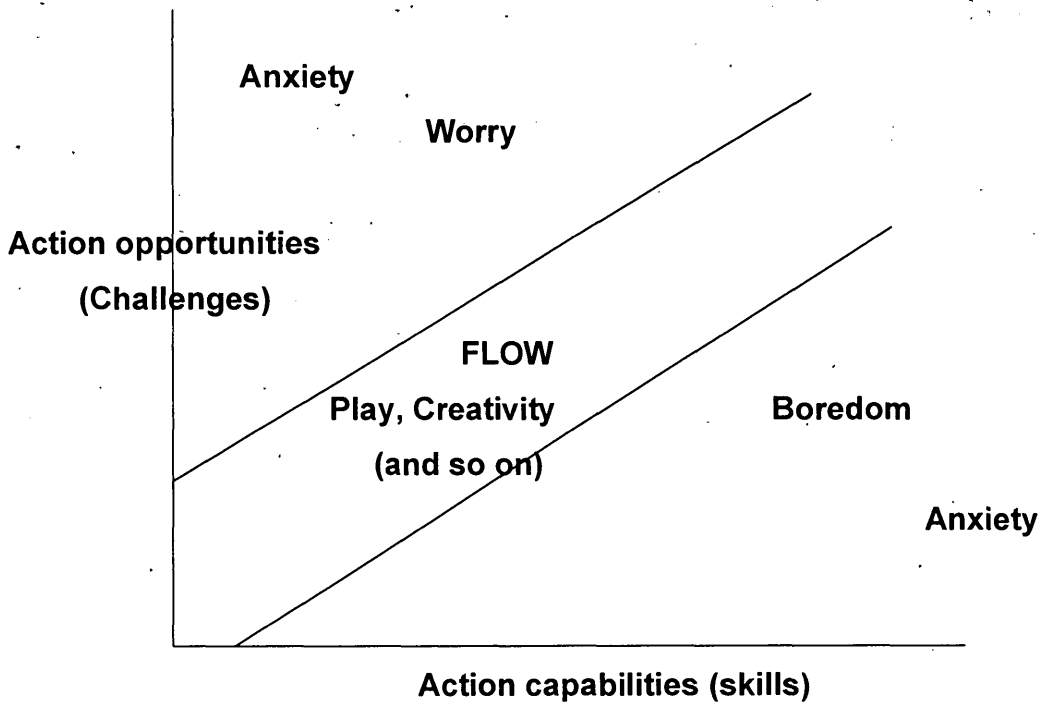


Figure 2.2 Model of the Flow State
(from Csikszentmihalyi, 1975)

Figure 2.2 illustrates how varying levels of flow occur. If challenges are too great, people can become anxious. If skills are higher but challenges remain too demanding this can cause worry. Where skills are greater than challenge, boredom or anxiety may be experienced depending on how the ratio changes. The state of flow is achieved when challenges balance with skills within the flow channel in the centre. Sato's study concludes by summarising the limitations of *bosozuko* by likening the activity to a form of play: '...like all play forms, (bosozuko) has its limitations. It involves many risks without allowing for the development of a great number of skills...When this point is reached, the activity no longer provides enjoyment.' (Sato, 1988, pg 116-117)

In the process of investigating flow experience in the music classroom, it will be important to come to some conclusions about whether or not collaborative music making limits flow experience in similar ways to those identified in Sato's research. These aspects are allied to levels of involvement, engagement and intrinsic motivation. In educational contexts there are sometimes situations where individuals may perceive themselves to have ability but may not be highly challenged or vice versa.

The second study on group flow reviewed here draws on flow theory to account for the influence of the social context on subjective experience by looking at interactions between musicians and actors. Sawyer (2006) has explored individual perceptions of experience with the social context by looking at interactions between jazz musicians. He proposes a model for group flow that draws on flow theory but with one difference. Csikszentmihalyi intended that flow represents a state of consciousness within the individual whereas group flow is a property of the entire group as a collective unit' (Sawyer, 2006; pg 158).

The model identifies three characteristics of group creativity in music and theatre (pg 148):

- *improvisation – the process of improvisation is such that creativity occurs 'in the moment of the encounter'*
- *collaboration – it is suggested that group creativity cannot 'be associated with one person; all members contribute and their interactional dynamics result in the performance'*

- *emergence – this refers to the creative product of a group and is rooted in the idea that 'the whole is greater than the sum of its parts' – emergent phenomena are unpredictable, contingent and hard to explain in terms of the group's component'.*

There is an important theoretical difference between the group flow model and the flow concept because the latter was designed to explain an individual's state of consciousness whilst the former is concerned with flow experience as 'a property of the entire group as a collective unit' (Sawyer, 2006, pg 158). Flow occurs in groups as a result of the interaction with other people who are working together to maintain and sustain the experience (Jimerson 1999). The extent to which group flow occurs in the current study will be considered when discussing the findings. It is anticipated that individuals will report varying levels of challenge and skill and therefore varying levels of flow. When discussing the findings, the extent to which participants influenced the creative output of the group will be taken into account in terms of the results of the analysis of the self reports, the analysis of the group talk and teacher assessments of quality of the music produced.

Sawyer (2006) used examples from his observations and interviews with jazz musicians to identify the key features of group creativity. Whilst performing, the interplay between them is likened to a musical conversation. He describes the interactions as 'immediate, durationally constrained to the moment of creation, and mediated by musical or verbal signs. The process of group creativity is coincident with the moment of reception and interpretation by other participants.'(Sawyer, 2008 pg 52) Sawyer proposed that studying the musical

interaction of professional jazz musicians provides a model for music educators to encourage and develop musical creativity in children through guided participation.

The notion of guided participation is a feature of Vygotskian approaches to learning and development that involve 'a variety of internal developmental processes that are able to operate only when the child is interacting with people *in his environment and in cooperation with his peers*' [my italics] (Vygotsky, 1978:90). The notion of guided participation will now be discussed in relation to how collaboration has been extensively researched in educational contexts within the social constructivist paradigm and has drawn on the work of Vygotsky to focus on the 'interdependence of social and individual processes in the co-construction of knowledge' (John-Steiner and Holbrook Mahn, 1985, pg 1). The role of language is central to this interdependence together with a wide range of other psychological tools, all of which are culturally mediated.

In studies on musical collaboration between adults and children, development is viewed as a process of joint socialisation and the concept is acknowledged as fundamental to enabling adults to provide effective guidance in the socialisation and development of children. It is based on understanding the mutual roles played by adults and children that 'rely on both the adults' interest in fostering mature skills and on children's own eagerness to participate in adult activities and push their own development' (Rogoff, 1986). The key to successful learning centres on the teacher's skill in operating within the child's zone of proximal development (Vygotsky 1978). Rogoff extends the concept by emphasising the interrelatedness of children's and adults' roles in a process of guided

participation. Both of these concepts relate to challenge and skill because teachers and adults can gauge how far to guide children to reach higher levels of both and so help them to experience flow. A simple way of representing this is to consider what is involved when carers teach young children to swim or ride a bike.

MacDonald and Miell (2000) examined communication in collaborative contexts in music classrooms that provide further insights for understanding the process of guided participation and relate to the profoundly social aspects of musical creativity (MacDonald and Miell, 2000). The research focuses on the ways in which children communicate during the creative process through the application of the concept of transactive communication (Berkowitz et al 1980) which accounts for 'the amounts of explanations, justifications, clarifications, resolved conflicts and elaborations of ideas produced by children working together, with a greater incidence of each reflecting more mutual engagement' (pg 349). Transactive communication, explained as the way an individual 'extends, elaborates or otherwise works on ideas that have previously been raised in the interaction – either by themselves or their partner' (pg 353), was found to be integral to successful collaborative musical activity. Conversely, non-transactive communication, when an individual produced a musical idea 'that was not directed towards the partner and had no relation to what had previously occurred' (pg 353), was found to be a feature of less successful collaborations. More successful collaborations took place between friends and the musical and verbal communication styles of friendship pairs were found to be qualitatively different from non-friendship pairs. In the light of this, it was proposed that the music produced by friendship pairs was rated more highly than that of non-friendship pairs because 'the patterns of results obtained suggested that

working with a friend made transactive communication more likely' (MacDonald and Miell 2000).

A further study, *Structured music workshops for individuals with learning difficulties* (MacDonald, O'Donnell and Davies, 1999) investigated social factors within the context of Gamelan workshops for adults with special needs. Video analysis of verbal and non-verbal transactive communication between the participants demonstrated how individuals develop joint attention. Gamelan music relies on the skill of the drummer, generally the workshop facilitator, to give musical signals to the rest of the group. A successful performance depends upon the participants' shared focus on the music. The social skills involved are complex, and subsequent interviews with carers showed that considerable benefit was gained from participation in the workshops in terms of enhanced self-esteem, self-confidence and improvement in communication skills. The findings from both of these studies reflect those of other research that has investigated the joint construction of knowledge for effective and productive collaboration in educational settings (Mercer; 1995, 2004). The next section discusses how Mercer has used sociocultural discourse analysis to relate the quality of interaction to the quality of experience in educational contexts.

2.6 Socio-Cultural Discourse Analysis as an Approach for Measuring the Qualitative Dimensions of Flow Experience

Socio-cultural discourse analysis explores the content and function of language to trace how shared understanding develops in collaborative contexts. The rationale is based on the Vygotskian approaches referred to in the previous

section that regard language as a 'cultural and psychological tool' (Mercer, 2004, pg 3). Mercer's primary focus for studying talk in collaborative contexts is to show how 'shared knowledge is both invoked and created' (pg 140) and the main methodological characteristics are:

- the focus on the functions of language during joint intellectual activity by presenting selected episodes of transcribed talk followed by a commentary
- the identification of words and phrases to show how they are representative of the ways in which knowledge is jointly constructed
- to investigate how collaborative talk relates to developmental and learning outcomes

In early observational studies of classroom interaction, Mercer and colleagues (Fisher, 1992; Dawes, Fisher and Mercer,1992; Mercer, 1995) provided three types of talk that typically occurred during collaborative learning episodes in classrooms. The description of each type is given here;

- Disputational talk: characterised by disagreement and individualised decision making. There are few attempts to pool resources to offer constructive criticism or make suggestions. Disputational talk also has some characteristic discourse features – short exchanges consisting of assertions and challenges or counter assertions.
- Cumulative talk: in which speakers build positively but uncritically on what the others have said. Partners use talk to construct a 'common knowledge' by accumulation. Cumulative discourse is characterised by repetitions, confirmations and elaborations.

- Exploratory talk: in which partners engage critically but constructively with each other's ideas. Statements and suggestions are offered for joint consideration. These may be challenged and counter-challenged, but challenges are justified and alternative hypotheses are offered. Partners all actively participate and opinions are sought and considered before decisions are jointly made. Compared with the other two types, in Exploratory talk knowledge is made more publicly accountable and reasoning is more visible in the talk' (Mercer, 2004, pg 146).

The definitions are provided to show how the theoretical notion of sociocultural discourse analysis is especially suited to investigating discourse features during group composing. The focus is on the function of language and how participants use it to introduce, explain and demonstrate musical ideas to each other and develop and execute agreed plans of action to achieve a finished performance. To take into account instances where it was observed that communication took place through music rather than through talk, the definitions for each category were expanded to include playing and/or singing as well as talk. For example if the interaction was cumulative, i.e. reflecting the construction of common knowledge, this was defined as *singing, summarising or playing to demonstrate how the music will sound.* Further examples of how musical interaction was incorporated into the features of each type of talk are given in tables 1, 2 and 3 in Chapter 5 of the thesis.

There are several conceptual similarities between this approach and flow research.

An added dimension is that investigations of dialogues using sociocultural discourse analysis are concerned with processes *and* outcomes. This is not always the case in language research within educational settings: researchers do not generally work with both within one piece of research although performance data is sometimes analysed in relation to process e.g. marks gained in a test after a particular intervention. It is usual for researchers to stay within a particular research paradigm and there is 'little overlap between experimental type methods to assess effect/outcomes and those who use qualitative methods to focus on processes' (Mercer, 2004; pg 144). This method of analysis was chosen because the focus is on educational processes and learning outcomes within the context of the classroom to investigate the quality of dialogue. This is comparable to the way in which flow research is conducted because 'the overall quality of experience, the total amount of flow a person has, may be influenced by the context in which flow is experienced' (Csikszentmihalyi and Csikszentmihalyi, 1988, pg 88).

For this study, analysis was conducted using descriptors derived from the features of Disputational, Cumulative and Exploratory talk to identify cooperative or competitive thinking, critical reflection and mutual acceptance of ideas (Mercer 2004, pg 16). Further explanation about how they were applied in this study is given in the introduction to the talk analysis in chapter 5.

2.7 Conclusion to the Review

The first section of this review outlined the structure of music education in UK state schools to show the emphasis on group work, particularly at Key Stage 3. This section also showed how practical music making in a collaborative context is integral to the core values of the music curriculum. Both parts provided a backdrop for introducing the theoretical focus of this study: the concept of flow.

In section two, the conceptual basis of flow was presented together with an outline of how the theory has developed since its introduction in 1975. Studies that have focused on the relationship between flow and sociocultural perspectives were reviewed and the principle measure for flow, a high balance of challenge and skills, was described to show how this balance is integral to achieving a state of flow. Section three reviewed the theoretical basis for measuring flow (the Experience Sampling Method) and the relationship between flow and theories of self-actualisation and self-determination.

The next part of the review made more specific links between flow and educational research. The first of these reviewed the relevance of flow theory in classroom –based studies that investigated intrinsic motivation, involvement, affect and engagement. Particular attention was drawn to how the Experience Sampling Method has been adapted as an observational tool to measure flow experience in very young children in musical activities. This research introduced the relevance of flow for musical development in terms of peer interaction and musical participation. An important aspect was the relationship between flow and sociocultural perspectives. Although the related research was not

conducted in an educational context, it provided a necessary background to contextualise the current study in relation to the social dimensions of flow and group interaction.

Continuing this focus on collaboration, a range of research was reviewed which explored the significance of collaboration which had parallels with the concept of flow. Vygotskian approaches to learning were shown to be central for making the connections between the social dimensions of flow, collaboration and educational contexts. Developing this further, the importance of language was shown to be integral to investigating flow. Particular attention was drawn to the work of Mercer and colleagues, who have developed approaches to studying collaboration by focusing on the quality of dialogue with the overall aim of improving quality of experience.

The following chapter describes how the study reported in this thesis brings together the strands of the areas reviewed in this chapter: flow, collaborative music-making practices in education and the role of social interaction.

Chapter 3

Research Design and Methodology: A Mixed-Methods Study of Flow in Collaborative Music Making Practices

3.1 Introduction

The chapter outlines the design of the study and focuses on the context of the research and the collection, management and analysis of data. Issues of reliability, validity and generalisability of the findings are also identified and explained.

3.2 Research Questions and Research Focus

The focus of the current research was to study collaborative music making in school settings to evaluate the extent to which the process generated flow experience. To this end research questions were formulated to explore the nature and quality of pupils' experiences whilst they are engaged in performing and composing:

1. To what extent do pupils experience a state of flow in the music classroom?
2. How is group talk associated with flow experience?

3.2.1 Research Context

The research was conducted in music departments in two state schools in the North West of England. In consultation with the music teachers in each school,

a number of pupils were approached as volunteers to take part. Volunteers came from three year groups at Key Stage 3: Year 7 (ages 11-12), Year 8 (ages 12-13) and Year 9 (ages 13-14). The Year 7 pupils (n = 106) attended School A, a state comprehensive school with specialist performing arts status and the Year 8 (n = 111) and 9 pupils (n = 91) attended School B, also a school with performing arts status.

The schools were chosen for this research because the music teachers had expressed willingness to participate. Most of the staff were already known to the researcher and general discussions about the possibility of including their schools in the study had already taken place. Initially, telephone calls were made to the Directors of Music to explain the form and content in more detail to confirm if they were still willing to take part and to arrange preliminary meetings in their respective schools. During these visits arrangements were made for which lessons were to be observed, and a timetable was drawn up. The meetings also gave the researcher an opportunity to meet the pupils and teachers informally, and to obtain permission from the head teachers to conduct research in their schools. Consent forms for parents outlining the content and purpose of the research and letters to the head teachers of each school were distributed and signed during this period. Copies of these and the timetables are in Appendix 1. Participants for recordings of a smaller group in each year were approached in the second week of the field work and decisions about who would be asked were made in consultation with the class teacher.

In both schools, the fieldwork took place over 3-4 weeks: a typical scheme of work in the Key Stage 3 music curriculum (described briefly in Chapter 2). As

already mentioned in Chapter 1 of this thesis, it was central to the aims of this research that empirical work involved studying pupils in classroom-based activities. It was also important that the research was conducted to represent the context of typical and everyday music instructional practices.

The scheme of work providing the basis for the fieldwork spanned from 3 to 4 weeks (Fieldwork in School A took place in November 2006 and in School B in June 2007). The schemes of work were designed with the aim of achieving a collaboratively composed piece of music for performance assessment. Year 7 classes were required to compose music that showed their interpretations of the musical elements and to produce a graphic score of the music. Year 8 composed call and response music based on African songs and Year 9 pupils composed songs in Britpop style. The lessons were structured in terms of whole-class (teacher – pupils) and group work (pupil-pupil) settings across the three to four week periods. The participants from Years 7 and 8 began group work during week two of the project and had two fifteen to twenty minute sessions to complete the piece. Performances and assessment took place in week three. Participants in Year 9 began their group work during weeks two and three and performances and assessment took place either in week 3 or 4 depending on their progress. During weeks one and two, pupils prepared their ideas in whole class lessons with the teacher. For group work, they chose with whom they wanted to compose and began initial discussions and planning in week 2.

3.3 Research Design

The research was structured according a mixed methods design incorporating quantitative and qualitative methodology. Data collection involved the gathering of two types of data: self-reports of flow experience and observational data of group work. Chapter 2 of the thesis provided a review of the background and principles of investigating flow using the Experience Sampling Method (ESM). This provided the principal data on which this study is based and formed part of the quantitative dimension of the mixed method design to address research question one.

Observational data consisted of video-recordings of group work. These were subjected to qualitative analysis and addressed the (secondary) research question 2. The relationship between the two data sets can be mapped onto what Creswell refers to as an "Embedded Correlational Model" (2002: 68). The notion of an embedded design reflects how the qualitative and subsequently exploratory dimension of this study, the analysis of group work, is embedded within the larger framework of the quantitative analysis which seeks to measure potential for flow more directly using the ESM.

Correlation refers to how the embedded supplementary data (i.e. observations) can be used to provide a basis for further analysis and exploration of the different relationships that arose out the findings of quantitative analysis (i.e. self-reports of flow). Overall, the nature of this design allowed for the investigation of each of the research questions on an individual and more integrated basis.

3.3.1 Data Collection I: Experience Sampling Forms

In line with the design of the study, phase one of data collection involved the completion of Experience Sampling Forms (ESFs) by all participants, which provided self-reports of flow experience. The aim of this part of the study was to gain insights into the extent to which pupils experience a state of flow in the music classroom.

Although Chapter 2 provided a specific outline and discussion of the use of the ESFs for the investigation of flow, it is important to emphasize that there is no standard format for the design of the form. In common with most studies, however, is the use a selection of open and closed questions and the inclusion of questions which concern both the internal (emotional wellbeing) and external dimensions (conditions, settings and situation) of experience. The form for the current study, together with a detailed outline of each of the items was introduced by Csikszentmihalyi and Schneider (2000) and Schneider and Waite (2005) (in Appendix 2)

Parts 1 and 2 of the ESF involved open ended questions and required respondents to report on aspects of the external dimensions of their classroom experience. One of the main aims was to ascertain the extent to which respondents were clear about the focus of the lesson. By doing so, it was thought that responses would be useful when considered in relation to levels of involvement, concentration and ability.

Part 3 was made up of a series of scales that measured items relating to the internal dimensions of experience. Individual items relating to emotional wellbeing were measured using a Likert scale with a range of 0 (low) to 9 (high). The questions measured the respondents' perceptions of their engagement and cognitive efficiency, i.e. how far they felt in control, how much they were concentrating and how confident they were about their abilities during the lessons. Engagement was measured by their scores for enjoyment, interest and involvement.

Part 4 measured the respondents' physical and emotional states using a seven point semantic differential scale (e.g. weak↔strong). Previous ESM research with talented teenagers has indicated that physical and emotional states are closely related and that positive and negative emotional states influence learning (Csikszentmihalyi, Rathunde and Whalen, 1997, pg 6). The variables and labels used in the analysis are listed below:

Part 5 was more specifically concerned with the measurement of aspects of social interaction. These concerned items relating to social and talk related variables, measured on a Likert scale with a range of 0 (low) to 9 (high). The latter were deemed integral features of successful collaboration in music lessons and were also found to be extremely relevant in terms of making links with qualitative dimension of the study overall.

Parts 6 and 7 focused on challenge and skill respectively, integral to flow experience. Responses to the questions, 'How challenging was music today?' and 'How were your skills in music today?' were measured on a Likert scale

with a range from 0 (low) to 9 (high). The sum of the scores for these items constituted the measure for flow.

Part 8 was in two subsections and measured the dimensions for intrinsic motivation. There were two open-ended questions, 'If you had a choice...Who would you be with?' and 'What would you be doing?' These were designed to support the responses in the first two parts of the form and enable further exploration of the extent of the respondents' interest and involvement during the lessons.

Prior to beginning fieldwork, a draft version of the ESF was piloted with a Year 7 class in School A. This revealed several shortcomings, notably with the design and administration. The form was revised to expand the Likert style scales and revisions were made to the wording of some of the categories was revised. For example, some pupils found the terms 'a little' and 'somewhat' a little vague on Part 2 of the form and these were changed to 'not much' and 'mostly'. These were also changed for Part 3.

The ESFs were distributed at the end of each music lesson for each year group (7, 8 and 9) over the three or four week period of the completion of the scheme of work. Each pupil completed at least two. Although a total of 952 forms were collected, not all parts were completed by the respondents so could not be included in the analysis.

	Year 7	Year 8	Year 9	Total
Number of ESFS	315	355	285	952

Table 3.1: Completed ESFs

3.3.2 Data Collection II: Collecting the Observational Data

Phase two of the research at this stage was specifically concerned with the collection of observational data. The aim of this supplementary part of the embedded correlational model design was to examine how, if at all, group talk might be associated with flow experience. Video-recordings of twelve small groups, ranging from three to six pupils from each class in Years 7, 8 and 9 provided the basis for the observation data. The decision was made to video-record the second composing session for each group as this was the final stages in the scheme of work where pupils would be expected to be working most closely in a collaborative context. The recordings therefore took place in weeks three or four of the overall data collection period.

For each video-recording session of the groups, the participants were based in a practice room or rehearsal space near the main classroom. They were unsupervised apart from occasional interaction with the teacher to check their progress. Apart from the video-camera and researcher's presence, which is discussed in more detail below, the set up of the group work resembled the same working environment that the pupils would usually operate in when taking part in classroom activities of this nature. Video-recordings of whole events, that is, complete group work sessions from the point at which the participants began

to set up the session to their exit, were collected using a small wide-angled digital video-camera. It was positioned on a tripod with the aim of capturing as much visual and audio data as possible. At the same time, the participants were requested to find an appropriate place to sit and remain in this place for the duration of the group work as far as was possible.

Table 3.2 provides further information about the nature of the data collection for the observation part of the study:

Data Sub-set	Small group	Week (3 or 4)	School	No of ESFs per participant
1	7L (n=5)	3	A	3
2	7E (N=5)	4	A	4
3	7T (N=5)	4	A	4
4	7N (N=5)	4	A	4
5	8c1 (N=6)	3	B	3
6	8c3 (N=5)	4	B	4
7	8b2 (N=5)	3	B	3
8	8c6 (N=3)	3	B	3
9	9c3 (N=6)	4	B	3
10	9c2 (N=5)	4	B	3
11	9b6 (N=5)	4	B	4
12	9b2 (N=6)	4	B	4

Table 3.2: Data Sets and Type of Data

Table 3.2 shows year group, group size and schools together with the number of corresponding ESFs collected from participants in each group. Audio data were found to be missing on the video-recording for 7N so further talk analysis of this group was not possible. 7L missed one lesson of the four due to

timetabling for another subject area. Classes 8b2 and 8c6 completed their composition one week ahead of the others in this year group. The lesson for 8c1 in week 3 was cancelled as the teacher attended an internal job interview. The lesson in week 3 for 9c2 was cancelled because all year 9 pupils were taking part in an inter form rounders competition. The small groups in 9b6 and 9b2 were recorded in week four as progress was slower than the others as several pupils were absent due to exchange trips to France.

3.4 Preparing the Data

3.4.1 ESFs

The first step was to prepare the responses from the ESFs and the video-recordings. The principal data set for the study, the ESF responses, was prepared first. Initially a coding system was created from the responses. This was important given the large number of ESFs collected, and for analytical purposes; it was particularly relevant for those parts of the ESFs requiring open-ended responses.

The first phase of coding the self-report data was to formulate a process for identifying the respondents and recording contextual information about when and where the form was completed. Unique identification codes were subsequently created for each participant. Appendix 3 provides a sample of the form created for these purposes.

Following this identification procedure, a series of codes were created to code the responses on parts 1, 2 and 8 of the ESF. Codes for these together with those responses measured using Likert scales are found in Appendix 3.

3.4.2 Observational Data

Preparing the video-recordings for detailed qualitative analysis involved the transition from a large amount of observational data to the specific identification of specific features of talk. As the video-recordings had been collected and digitised for computer readable format in the form of 12 separate recordings, a decision was made to work through these chronologically and systematically. Initially, commentaries were made of each lesson including those of the group work sessions in weeks three or four which formed the specific data to be subjected to qualitative analysis. The commentaries involved breaking down the observation data in terms of their overall structure (i.e. opening, middle and ends of lessons) and the development of stages the participants went through to arrive at the final composed pieces which were 'ready to perform' in the group work. At this stage too, initial 'eye-balling' of the data was possible for the identification of potential points of interest in the group work. Subsequent to the lesson commentaries transcription work began on the video-recorded interactions. In total, 11 transcripts were produced (one was absent for one group due to missing audio data as described above).

Transcriptions of whole group work sessions constituted both a further method of preparing the data. Transcription involves representing but not reproducing the recorded events. Producing the transcripts necessitated specific choices about what to represent from the interactions and how to represent it. Chapter

5, which reports the analysis and findings of the analysis of group work shows how the focus of the analysis was on the function and role of pupils' utterances in relation to each other rather than the 'structure', i.e. 'who speaks when'. This focus is reflected in the transcripts, for example, where overlapping speech is represented by simple markers to indicate overlaps generally rather than specifying the specific point at which overlaps occurred.

After the production of the 'draft' transcripts, the next stage was to identify the specific segments which would become the talk episodes to be subjected detailed analysis. This was done by further examination of the video-recordings and the transcripts.The selection of episodes was to a certain extent motivated by the decision to adopt a specific theoretical framework for analysing the interaction data. This framework is mentioned later on in the analysis part of this chapter and in more detail at the opening of Chapter 5. Whilst the selection of what would likely to be most relevant episodes was to some extent influenced by the adoption of the theoretical framework, this did not detract from the fact that the data needed to be explored and its 'in the moment' nature probed in the selection of episodes. This 'data-driven' stage was facilitated by using Atlas.ti (http://www.atlasti.de), a qualitative analysis software package designed for the management and analysis of written and spoken data.

Figure 4.1 gives an example from one of the transcripts to show the process of data management using the software. It shows how the programme facilitated the process of identifying different segments in the group work. A particular set of utterances could be highlighted and then given a particular descriptor. The

nature of these descriptors is briefly outlined in the following section on analysing the interaction data and in more detail at the beginning of Chapter 5.

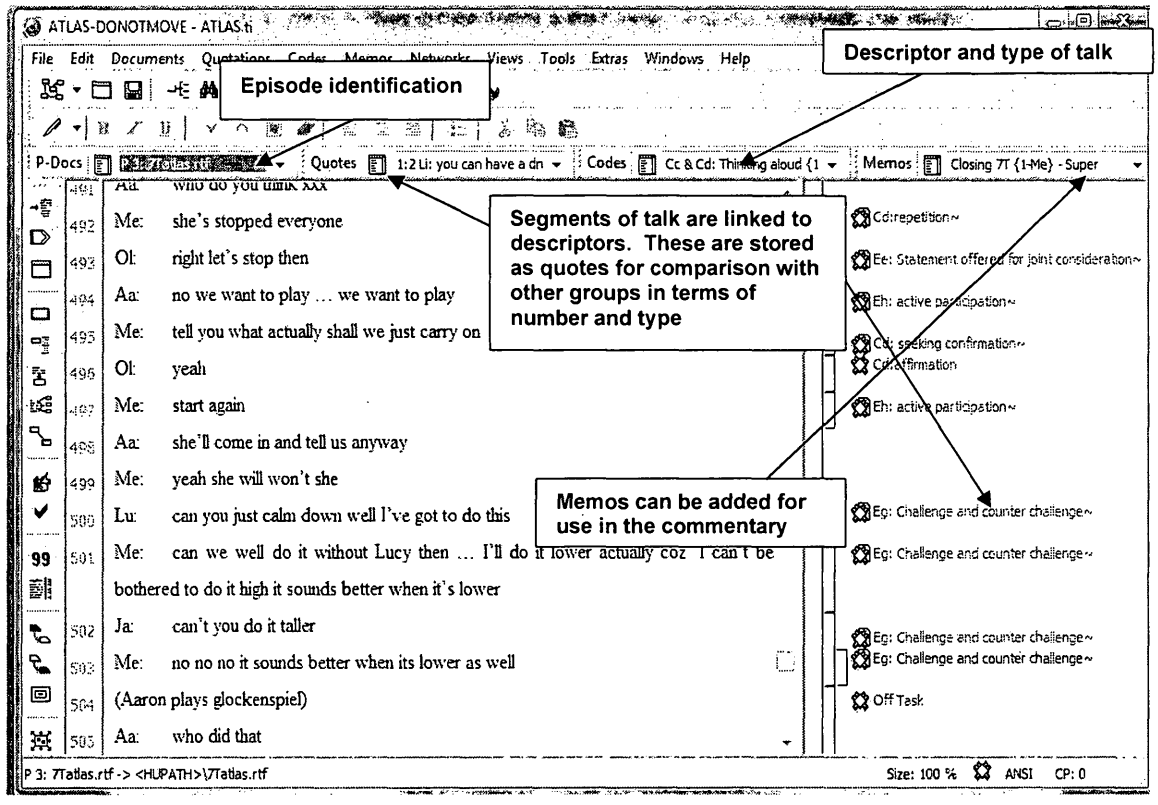


Figure 3.1 Graphical Interface from Atlas.ti

3.5 Analysing the Data

3.5.1 Analysing the Self-report data

Data used for the quantitative dimension of the study were taken from responses in weeks 1, 2, 3 and 4 (n=952). According to Tabachnick and Fidell (1983), a sample size of 300 is considered good and 500 and over is considered very good. The analysis used a descriptive quantitative design where the aim was to establish associations between variables.

The analysis was conducted in four stages:

Stage 1

The first stage followed the most commonly used method for measuring flow (i.e. the combined scores for the items on the ESFs for challenge and skill) to create a measure of flow (Hektner et al, 2006). The rationale for this is explained in Chapter 2, section 2.2.1). These items took the form of questions which were scored on a Likert scale of 0 – 9. For the first question, 'How challenging was music today?' scores of 0-1 indicate not at all, 2-4 not much, 5-7 mostly and 8-9 always. For the second question, 'How were your skills in music today?' scores 0-1 indicate not good, 2-4 sometimes good, 5-7 quite good and 8-9, very good. This stage was conducted first to provide a general indication of the proportion of the sample that experienced flow in each week.

Stage 2

The second stage was to calculate the means and standard deviations of the challenge and skill measures as separate items for each week. This was done to ascertain the ratios between challenge and skill (Figure 4.1, page 79).

Stage 3

The responses to the questions in parts 3, 4 and 5 of the ESF were entered into SPSS to create datasets for each week. Factor analysis was conducted and the composite factors that emerged were correlated with the standardised (z) scores for flow (challenge+skill) to find out if there were any significant

correlations with the other experiential items. . The statistical decisions regarding factor analysis were made in the light of previous research using the Experience Sampling Method (Hektner et al 2006). Also termed structural equation modelling (SEM), the purpose of the process is 'to create a set of latent variables from several measured ESF items [that] allows the researcher to separate the unique variation in those items from the shared variation' (Hektner et al, page 99). An important aspect is that 'the variance that the items share in common then defines a latent variable that is potentially free from measurement error' (op.cit.pg 99). In this study, factors that emerged from each group of respondents (i.e. In Flow, PFlow and No Flow for each week the ESFs were administered) provided the data for conducting a series of correlations between the composite variables and the standardised (z) score for flow.

In addition, responses for each ESF in weeks three and four were grouped according to how they related to the balance of challenge and skill categories (AFlow and BFlow) following the model by Csikszentmihalyi, Rathunde and Whalen (1997) reproduced in Chapter 4, pg 65.

Stage 4

The final statistical procedure, multiple regression analysis, was conducted to ascertain which of the experiential dimensions made a significant contribution to the variance in flow. The regression analysis was conducted on the data from the In Flow respondents on the ESFs administered in weeks 3 and 4. These were the weeks when the main activity was group composing and when more respondents reported flow so provided further confirmation of which experiential

dimensions contributed most significantly for flow to be reported. The procedure has been found to be appropriate for studying flow, 'to test how well various combinations of momentary perceptions of challenge and skill predict momentary quality of experience' (op.cit. page 100). Studies where this procedure has been used to predict flow have been conducted by Moneta and Csikszentmihalyi (1996 and 1999) and Moneta, Schneider and Csikszentmihalyi (2001).

3.5.2 Analysing and elaborating on the interaction data

The transcribed episodes of interaction became the focus of the detailed talk analysis which is now described more specifically. In line with the research questions, the aim of interaction analysis was to find answers to the extent to which (and which aspects of) talk between children was associated with flow experience. In the embedded correlational design of this study, the role of the observation data was to help elaborate the findings of the self-reports and did not constitute 'stand alone' data.

The analysis of the interaction demanded a systematic system for probing the nature of the interactional episodes. This system was developed following the adoption of a theoretical framework which not only allowed for the researcher to make sense of the data but also to make links to flow experience in a structured way.

The theoretical framework adopted was linked to sociocultural approaches to understanding interaction in collaborative contexts and more specifically

developed the work of Mercer (2004) and colleagues (Fisher, 1992; Dawes, Fisher and Mercer, 1992; Mercer, 1995). To analyse the selected episodes, an approach termed "sociocultural discourse analysis" was applied (Mercer, 2004, pg 141).

Originating in linguistic discourse analytical approaches, this form of interaction analysis is concerned with the ways in which "shared knowledge is both invoked and created" in talk (p.140). It studies this by aiming to link the form and functions of language at the level of the natural units of interaction, for example in utterances, exchanges (sets of one of more paired utterances) or moves. It is therefore rooted in the functional analysis of language namely speech act theory which is concerned with the relationship between language and action or in other words, what we do with words (Searle, 1969). Sociocultural discourse analysis extends on linguistic discourse analysis by focusing on the collaborative and co-constructed nature of talk in knowledge sharing contexts such as group work. (Chapter 2, Section 2.6).

Three broad descriptors formed the basis of the analysis of the interaction in the episodes selected in this study: disputational talk, cumulative talk and exploratory talk. Chapter 5 shows how the characteristics of these forms of talk, which originated out of previous studies of collaborative work in classrooms by Mercer (2004) in the sociocultural discourse analytical vein, were mapped onto the nature of the talk produced in the group work episodes. This section of the thesis on research design has provided a brief description of the analysis of these data from the children's talk. The particular approach to sociocultural

discourse analysis adopted will be dealt with in more detail in the introduction to Chapter 5.

3.6 Reliability, Validity and Generalisability

It is important to acknowledge how the analysis dealt with issues of reliability, validity and generalisability. In this mixed-methods study, all three were dealt with in different but complementary ways in relation to each part of the research design.

A first issue concerns construct validity of the ESF used to collect the self-report data. Ensuring validity in this dimension of the study was facilitated in part by the strength of the ESF as an established research instrument used to measure flow experience. Hektner et al (2006) argue that as a methodological tool, the ESM is psychometrically sound and they devote a number of pages in their guide to applying the ESM to the reliability and validity of its measurements. They also cite the large number of studies conducted using different ESF designs based on the ESM to argue for the high level of ability of ESM-based research instruments to "capture the details of momentary experience that would otherwise have been lost" (pg121).

In terms of the ESF in this study, previous piloting also helped to ensure its construct validity. A second priority was to ensure internal reliability which links more specifically to the kinds of prescribed procedures for researchers applying quantitative methods in their research design and is usually addressed through the use of Cronbach's alpha.

Table 3.3 on the following page displays the results for the Activity related measures (AR).These measures correspond to those parts of ESF concerned with the internal dimensions of classroom learning (i.e. items relating to emotional wellbeing) measured using Likert scales, a reliability analysis was conducted to assess internal consistency in terms of the extent to which respondents varied on each individual item.

A high value for Alpha (0.75 or above) is considered a reliable measure. The alpha reliability of the AR variables was 0.93, indicating that the scale had good reliability.

Measure label	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
AR ENJOY	79.1053	130.655	.736	.809
AR INTEREST	79.5789	127.480	.774	.804
AR CONCEN	79.5789	120.591	.847	.795
AR EXPO	79.3684	132.135	.849	.807
AR CONTROL	80.3158	121.895	.662	.808
AR INVOLVE	79.1579	128.029	.906	.800
AR ABILITY	79.1053	135.099	.715	.814
AR IMPY	79.7368	132.094	.552	.819
AR EXPY	79.6316	132.468	.567	.818
AR SUCCESS	78.8947	134.322	.753	.812
AR WISHDOE	83.3158	169.228	-.279	.940
AR GOOD	79.7895	133.064	.626	.815

Table 3.3 Internal Reliability for Activity Related measures on the ESF.

The terms used in the first column are the labels for the following Activity Related measures in Part 3 of the ESF:

ENJOY	**Did you enjoy what you were doing?**
INTEREST	**Was the lesson interesting?**
CONC	**How well were you concentrating?**
EXPO	**Were you fulfilling your own expectations?**
CONTROL	**Did you feel in control of the activities?**
INVOLVE	**Did the activities allow you to be involved?**
ABILITY	**Did you have the abilities to deal with the activities?**
IMPY	**Were the activities important to you?**
EXPY	**Were others expecting a lot from you?**
SUCCESS	**Were you succeeding at what you were doing?**
WISHDOE	**Did you wish you were doing something else?**
GOOD	**Did you feel good about yourself?**

Measure label	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
MR HAPPY/SAD	34.9831	116.661	.707	.812
MR WEAK/STRONG	32.2110	144.955	-.219	.874
MR OPEN/CLOSED	34.6414	114.460	.692	.811
MR ACTIVE/STILL	34.7553	117.008	.608	.817
MR CHEERFUL/IRRITATED	34.8186	115.344	.683	.812
MR INVOLVED/UNINVOLVED	34.8565	114.581	.640	.814
MR EXCITED/BORED	34.1477	108.550	.705	.807
MR LONELY/IN A GROUP	31.9451	144.594	-.208	.875
MR ALERT/SLEEPY	34.6245	112.973	.703	.810
MR RELAXED/UPTIGHT	34.6203	119.567	.498	.825
MR PROUD/ASHAMED	34.7426	117.904	.687	.814
MR CLEAR/CONFUSED	34.6287	115.285	.616	.816
MR COOPERATIVE/COMPETITIVE	34.7975	117.959	.560	.820

Table 3.4 Internal Reliability for Mood Related measures on the ESF.

Table 3.4 displays the results for the Mood Related measures. The alpha reliability of the MR variables was 0.83, indicating that the scale had good reliability. The terms used in the first column are the labels for the following Mood Related measures in Part 4 of the ESF:

HAPPY Very happy ↔ very sad
WEAK Very weak ↔ very strong
OPEN Very open↔very closed
ACTIVE Very active↔very still
CHEERFUL Very cheerful↔very irritated
INVOLVED Very involved↔very uninvolved
EXCITED Very excited↔very bored
LONELY Very lonely↔included in a group
ALERT Very alert↔very sleepy
RELAXED Very relaxed↔very uptight
PROUD Very proud↔very ashamed
CLEAR Very clear↔very confused
COOPERATIVE Very cooperative↔very competitive

The longitudinal design of the study, whereby self-report data was collected over a three to four week period, meant that the issue of external reliability, i.e. the degree of consistency of the measures for flow, had the potential to indicate fluctuations in the results. Indeed, when examined longitudinally, statistically significant differences were found between self-reports of some measures between week one (where the participants were engaged in teacher-led activities) and weeks three or four (where the participants were engaged in pupil-led group work). With this in mind, care was taken to ensure appropriate time given over to filling out the ESFs at the end of each lesson.

The observational dimension of the study involved different procedures relating to reliability and validity, given that such qualitative approaches do not entail the same level of structure and control over the data. The ability to generalise from the qualitative findings was important in this study. In terms of validity issues, particular attention was paid to ensuring internal validity in number of ways.

At the level of data treatment, the researcher paid specific attention to being comprehensive in covering all of the observational data, at least, in some way, i.e. the lesson commentary work formed part of this process. However, at the data collection stage internal validity of the research was addressed in terms of

maximising possibilities for as naturalistic data as was possible under the circumstances. This involved paying particular attention to ethical considerations including maintaining good relationships with the participants.

External validity, and subsequently generalisability (including the qualitative dimension in this study) was addressed at the level of the research design in terms of choice of research context where there was a need to situate the study in a typical school setting and in the context of typical forms of academic work. This was detailed at the opening of the chapter in the description of the research setting.

Finally, issues of reliability are to a certain extent linked to internal validity in the sense that the comprehensive treatment of the data and the explanation of the steps taken to manage it in this chapter contributes to maintaining an appropriate level of trust. Related to the more specific issue of internal reliability however more particular steps were taken at the analysis stage to ensure reliability at the level of ascribing episodes of talk and their utterances to three descriptors as briefly mentioned in the section on analysing the observation data. Thus, inter-rater reliability measures were taken where a fully trained discourse analyst was asked to check the descriptions ascribed to particular exemplification of types of talk (this involved all episodes presented in the thesis). It was found that this second person concurred with all but a couple of the descriptors. Where there were differences, this was a related to an insufficient explanation on the part of the researcher as to what a particular descriptor consisted of. This explanation was also subsequently modified to improve it.

Chapter 4

Analysing Flow Experience: Self-reports

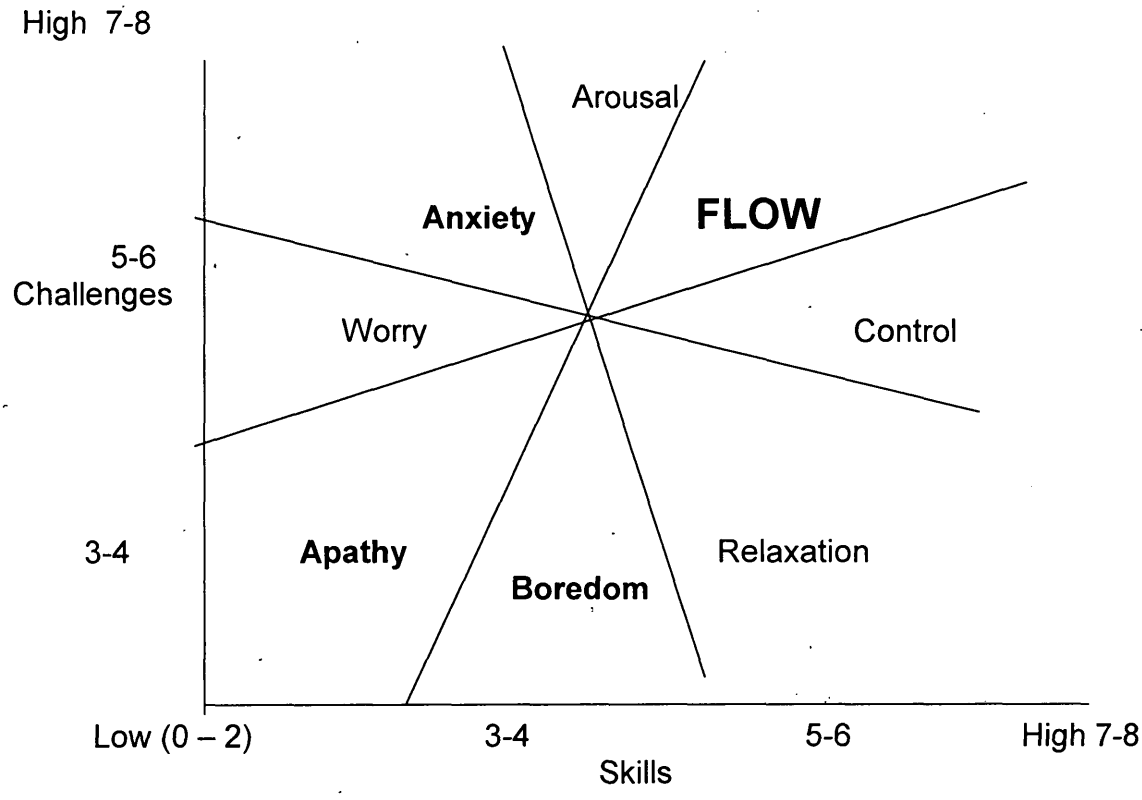
4.1 Introduction: Rationale for the quantitative analysis

The Challenge and Skill questions on the ESFs provided two ways of using the data for analysis to address the first research question 'To what extent do pupils experience a state of flow in the music classroom?' The first way was to combine the respondents' raw scores for the challenge and skill items for use as the primary indicator of the extent to which individuals experienced flow. The second way was to use the standardised (z) scores as a measure of the challenge-skill ratio. Responses from each ESF were grouped according to how they related to the balance of challenge-skill categories identified in the model by Csikszentmihalyi, Rathunde and Whalen (1997).

Responses from each ESF were grouped according to how they related to the challenge-skill categories identified in the model by Csikszentmihalyi, Rathunde and Whalen 's model (see below Figure 4.1): high challenge/high skill (flow), high challenge/low skill (anxiety), low challenge/high skill (boredom), low challenge/low skill (no flow)' (Csikszentmihalyi, Rathunde and Whalen, 1997, pg 56).

Figure 4.1 provides a visual representation of the possible combinations of the challenge and skill measures discussed in Chapter 2. As well as including the four major experiential situations predicted by flow theory: flow, anxiety, boredom and apathy (ie no flow), the diagram also shows how other

experiential dimensions can be taken into account. Further explanation of how the responses to perceptions of challenge and skill in this study were categorised is provided on page 81 of this chapter.



(Adapted from Finding Flow: Csikszentmihalyi, 1997)

Figure 4.1 Flow experience: relationship between challenges and skills

Hektner et al (2006) explained the importance of identifying which of the items on the ESF relate to flow experience:

> The key question at the heart of flow theory is whether the flow condition (simultaneously high challenge and skill) actually coincides with the flow experience (positive emotional, motivational and cognitive experience). On this question, in study after study across wide-ranging samples the results are clear and convincing: the most positive combination of

multiple aspects of inner experience occurs in the flow condition. When people are in the flow condition, they have more positive moods, higher self-esteem, stronger intrinsic motivation, more intense concentration, and a greater sense that what they are doing is important (eg Hektner, 1996, Massimini &Carli,1988 in Hektner et al 2006, pg 142).

The ESM is designed to measure flow and the conditions necessary for flow to occur and each stage of the analysis will now be explained.

Stage 1

The first stage of analysis is reported and follows the most commonly used method to ascertain flow experience, ie to combine the scores for the items on the ESF for challenge and skill to create a measure for flow (Hektner et al, 2006, pg 93). The flow measure was calculated by adding together the challenge and skill scores for questions 6 and 7 on the ESF, 'How challenging was music today?' and, 'How were your skills in music today?' The scores in each part of the range provided a general indication of the proportion of the sample that experienced flow.

Stage 2

Stage two of the analysis was to compute the means and standard deviation for the challenge and skill measures (as separate items) for each week. According to flow theory, a state of flow is achieved when reported levels of challenge and skill are high and equal. This designates as flow 'the computed percentage of flow by the perception of above average challenges and skills

compared with the *group's* weekly average' (Csikszentmihalyi, Rathunde and Whalen, 1997, pg 233). The results are given in Table 4. 1.

In this study, the ESFs were categorised as follows:

In Flow (high challenge/high skill): For these respondents the combined totals of their scores for Challenge and Skill were equal to or more than 15 (maximum possible score 18) and the analysis focuses on the extent to which individuals' responses reflect the experiential dimensions associated with flow.

PFlow (low challenge/high skill and vice versa): The self reports of those whose scores for combined levels of challenge and skill were between 9 and 15 are referred to in Stage 3 of the analysis as PFlow (to denote a possibility, ie P, of experiencing flow at some point during that lesson).

No Flow (low challenge/low skill): Respondents in this group reported scores for challenge and skill which were between 0 and 8. The respondents in this group perceived themselves to have had low levels of skill and had not felt particularly challenged by the activities during the lesson. This will be investigated by testing for significant correlations between the reported experiential dimensions and the measure for flow.

Stage 3

In stage 3, factor analysis was conducted to model a pattern of relationships between the items on the ESFs for each week. Exploratory factor analysis is essentially a way of reducing the overall scores on all the component scales into smaller 'chunks' that can be categorised as being more or less associated

with the state of flow. The composite factors that emerged were subsequently correlated with the standardised z scores for flow (challenge+skill) to find any significant correlations with the other experiential items on the forms.

Stage 4

For the final stage, multiple regression was conducted to ascertain which if any of the experiential dimensions made a significant contribution to the variance in flow. The method is a way of establishing which items could be seen as predictors for flow experience and takes into account the underlying response level variability that was found during the process of factor analysis. Multiple regression models are used to study flow 'to test how well various combinations of perceptions of challenge and skill predict the quality of experience' (Hektner et al pg 100).

The chapter concludes with a summary of the findings and discussion about how these informed the subsequent qualitative analysis of the small group talk (presented in Chapter 5).

4.2 Stages of Analysis

4.2.1 Stage 1: Evidence of Flow Experience

Week	% Flow 0-4 Not at All	% Flow 5-8 Not Much	% Flow 9-14 Mostly	% Flow 15-18 Very Much
ESF 1	4.4	16.2	64.1	15.3
ESF 2	4..2	23.5	58.0	14.3
ESF 3 /4	5. 2	16.9	58.9	19.0

Table 4.1. Summary of the percentage of responses in each part of the scale for the flow conditions variable in each of the weeks

Table 4.1 gives the percentages of scores in each part of the range for each week. The musical activities in weeks one and two comprised a mixture of whole class and/or group activities. In weeks three or four all pupils were participating in group composition activities for all or most of the lesson. The ESFs were completed at the end of lessons rather than signalling participants during lessons to avoid disruption. Administering them at the end of lessons has been used in other flow research in educational contexts for the same reason (eg Schweinle et al 2006).

The highest possible score on the Likert scale is eighteen and the lowest is zero. The range is divided into four parts; 0-4 'Not at all', 5-8 for 'Not much', 9-14 for 'Mostly' and 15-18 for 'Very Much'. The summary shows a similar percentage of scores in the lowest part of the range for 'Not at all' (between 4% and 5%) for each week. In the next part of the range, the percentage for 'Not much' is similar in week one and in weeks three/four (16.2% and 16.9% respectively) and is higher in week 2 (23.5%). The percentage of scores in the part of the range for 'Mostly' is highest in week 1(64.1%) and is lower in week two and weeks three/four (58.0% and 58.9%). The highest part of the range indicates 'Very Much' and provides the percentage of the highest scores for the challenge and skill measures. This is therefore regarded as the percentage of the sample who achieved flow. The percentages for weeks one and two are similar (15.3% and 14.3%) and higher for the combined weeks 3 and 4 (19.0%). One of the aims of the analysis will be to investigate the extent to which these differences are significant.

4.2.2 Stage 2: The Measure for Flow

Table 4.2 shows the separate means and standard deviations of the scores for the challenge and skill questions for each week. (The response scores for weeks three and four are combined for the reasons explained earlier). Both ranges are divided into four parts with the highest possible score on the Likert scale of nine and the lowest of zero. The range for the challenge question, 'How challenging was music today?' is: 0-1, 'Not at all'; 2-4, 'Not much'; 5-7, 'Mostly' and 8-9, 'Always'. The range for skill question, 'How were your skills in music today?' is; 0-1, 'Not good'; 2-4, 'Sometimes good'; 5-7, 'Quite good' and 8-9, 'Very good'. For weeks one and two the mean scores for skill (5.92 and 6.10 respectively) are higher than that for challenge which is 4.89 in week one and 4.71 in week two. In weeks three and four, the mean scores for skill are also higher but much nearer to the mean for challenge. Both are between 5 and 6 (Challenge = 5.36 and Skill = 5.82).

	Challenge	Skill
ESF Week1	Mean 4.89 S.D. 2.29	Mean 5.92 S.D. 2.11
ESF Week 2	Mean 4.71 S.D. 2.44	Mean 6.10 S.D. 2.31
ESF Week3/4	Mean 5.36 S.D 2.46	Mean 5.82 S.D. 2.46

Table 4.2 Mean scores and standard deviation for Challenge and Skill

4.3 Stage 3: Factor analysis, Correlations with Flow

Having found evidence to suggest that some respondents may have experienced flow, the next stage was to find out what characterised their experiences by conducting an exploratory factor analysis. The procedure is essentially a form of data reduction and SPSS (Statistical Package for the Social Sciences) was used. This method has been used in flow research to determine the best way to group ESM items into smaller groups of composite factors (Hektner et al 2006). Correlation is the measure of the strength of a relationship between the independent variables, ie the activity related, mood related and interactional items and the dependent measure for flow, ie the combined scores for the challenge and skill items. The results of factor analysis and the correlations with flow for each week in which the ESFs were completed are presented in this section.

For reasons explained in the introduction to this chapter, scores of 15 or more for flow (ie combined challenge and skill scores) are categorised as 'In flow'. Those who scored between 9 and 14 are categorised as 'Pflow' (ie P denotes may have had a possibility for achieving flow). There were indications that some respondents in this group may have experienced flow at some point in the lesson because the standard deviation differed quite substantially from the mean. Those who scored 8 or less are referred to as 'No flow'.

4.3.1 ESF Results Week One

4.3.1.1 Activity Related Measures

Table 4.3, on the following page, shows the factor loadings for the activity related measures computed from the ESFs completed in week 1. These dimensions are given the term 'activity related' because they measure individual perceptions of experiential dimensions of engagement (Factor 1: ENGAGE), self confidence and self esteem (Factor 2: SELFC), ability (Factor 3: POTENCY) intrinsic motivation (Factor 4:MOTIV). For the 'In flow' respondents, factor 1 includes the items for enjoyment (enjoy), concentration (concen) and interest (interest). These items have been found to be the most important dimensions for flow and are indicators of intrinsic motivation and engagement (eg Shernhoff et al 2003). The measure for importance (impy) also loads on to factor 1 giving further indications of engagement with the activities during this lesson because the self reports indicated that the activities were important to them. Factor 2 loads together perceptions of ability (ability), success (success) and the expectations of others (expo).

The labels and questions used for the Activity Related measures (part 3 of the ESF) are given below:

ENJOY	**Did you enjoy what you were doing?**
INTEREST	**Was the lesson interesting?**
CONC	**How well were you concentrating?**
EXPO	**Were you fulfilling your own expectations?**
CONTROL	**Did you feel in control of the activities?**
INVOLVE	**Did the activities allow you to be involved?**
ABILITY	**Did you have the abilities to deal with the activities?**
IMPY	**Were the activities important to you?**
EXPY	**Were others expecting a lot from you?**
SUCCESS	**Were you succeeding at what you were doing?**
WISHDOE	**Did you wish you were doing something else?**
GOOD	**Did you feel good about yourself?**

AR In flow n=30	Item label	Factor Loading 76.55%	AR Pflow n=146	Item label	Factor Loading 59.37%	AR No flow n=52	Item label	Factor Loading 66.40%
Factor 1	enjoy	.87	Factor 1	**success**	.83	Factor 1	expy	.88
24.62%	impy	.84	23.14%	expo	.72	23.49%	control	.68
INVOLVE-MENT	**concen**	.62	SELFC	**concen**	.71	POTENCY	ability	.67
	interest	.62		good	.64		good	.60
				control	.60		expo	.58
Factor 2	expo	.91	Factor 2	involve	.78	Factor 2	impy	.82
21.05%	ability	.90	21.90%	interest	.75	22.37%	-wishdoe	-.82
SELFC	**success**	.75	INVOLVE-MENT	enjoy	.63	MOTIV	enjoy	.79
				ability	.56		interest	.63
				-wishdoe	-.53			
Factor 3	good	-.87	Factor 3	expy	.71	Factor 3	**concen**	.80
16.05%	control	.66	14.33%	impy	.70	20.54%	**success**	.60
POTENCY	expy	.54	MOTIV			INVOLVE-MENT	**involve**	.49
Factor 4	involve	.82						
14.82%	-wishdoe	-.79						
MOTIV								

[1]Table 4.3 ESF Week 1 Factor Analysis of the Activity Related items (AR)

Factor 3 loads together feeling good (good), being in control (control) and fulfilling own expectations (expy). Factor 4 loads together involvement (involve) and a negative loading for wishing to be doing something else (-wishdoe).

The pattern of relationships suggests that factor 1 is about engagement, factor 2 is about self confidence, factor 3 is about potency and factor 4 about motivation. Contained in these are the items of the ESF that are associated with cognitive efficiency, which is defined as the extent to which respondents were able to 'control the allocation of attentional resources' (Csikszentmihalyi, Rathunde and Whalen, 1997, pg 55). The items that reflect cognitive efficiency in the activity related measures are concentration, ability, feeling good and

[1] The output for Table 4.3 is presented in Appendix 7, SPSS Output, as follows: AR In Flow, pages 234 and 235, AR PFlow, pages 238-241 and AR No Flow, pages 243-246.

being successful suggesting that the 'In Flow' respondents were well-focused and had positive experiences during the lesson.

The grouping of the items for the 'Pflow' respondents showed a different pattern. Factor 1 loaded together success, expectations of others (expo), concentration (concen) and being in control (control). For this part of the sample it would appear that they had perceptions of success in terms of fulfilling the expectations of others. The loadings suggest that concentration and being in control may have been related to self confidence. Factor 2 loaded together involvement (involve), being interested (Interest), enjoyment (enjoy), having ability (ability) and not wishing to be doing anything else other than participating in the lesson (ie a negative loading for wishdoe). Included here were two items that relate to engagement; enjoyment (enjoy) and being interested (interest) and these items also loaded together for the 'In Flow' group. The lowest percentages of variance in Factor 3 loaded together personal expectations (expy) and perceived importance of the activities (impy) to suggest that the 'Pflow' respondents did not perceive the activities to be as important as the 'In Flow' group so may not have had such high expectations of themselves.

The pattern of relationships between the measures for the 'No Flow' group are different again in that factor 1 loaded together personal expectations (expy), feeling in control (control), having ability (ability), feeling good (good) and fulfilling the expectations of others (expo). Factor 2 loaded together perceptions of importance (impy), enjoyment (enjoy) and not wishing to be doing anything else (a negative loading for wishdoe). Factor 3 loaded together perceptions of concentration (concen), success (success) and involvement (involve).

4.3.1.2 Mood Related Measures (MR)

The mood related measures are so called because the items relate to emotional well-being. In general terms, the items were intended to explore self reports of affect and levels of potency using semantic differential scales that required choices to be made between opposing feelings. Some items relate to cognitive efficiency in that the nature of the responses for clear↔confused, involved↔uninvolved, proud↔ashamed were intended to reflect how well-focused and confident the respondents perceived themselves to be on the 7 point scale (see copy of ESF in Appendix 2).

The labels used for Mood Related measures (part 4 of the ESF) are given below:

HAPPY Very happy ↔ very sad
WEAK Very weak ↔ very strong
OPEN Very open↔very closed
ACTIVE Very active↔very still
CHEERFUL Very cheerful↔very irritated
INVOLVED Very involved↔very uninvolved
EXCITED Very excited↔very bored
LONELY Very lonely↔included in a group
ALERT Very alert↔very sleepy
RELAXED Very relaxed↔very uptight
PROUD Very proud↔very ashamed
CLEAR Very clear↔very confused
COOPERATIVE Very cooperative↔very competitive

No patterns of relationships were found and there no expectations of any at this point. In general terms, the majority of respondents reported positive moods and levels of potency which is in line with their reports of having quite good skills (see table of means in appendix 4).

4.3.1.3 Social and Talk Related Measures (S&T)

The social and talk related items recorded the respondents' scores for their perceptions of their interaction with others and are included to confirm findings of research that has established that pupils are more engaged when they feel that their ideas are valued (Yair, 2000). There were three questions:

Whilst talking with other people -
Were you able to express your opinions? (EXPRESSY)
Were others really listening to what you had to say? (LISTENY)
Did you care what others were saying? (CAREY)

The responses to these items were each measured on a Likert scale with a range of 0 (low) to 9 (high). Table 4.4 shows the percentage of variance for each and they are grouped together under the heading of INTERACTION. In this lesson, the percentage of variance for, 'Were you able to express your opinions?' (EXPRESSY) was very similar for the 'In Flow' and 'Pflow' respondents (64.47% and 63.86% respectively). For the 'No flow' group, the responses to the question 'Were you able to express opinions?' (EXPRESSY), indicated a high percentage of variance (57.85%) although this was lower than for the other two groups. The second item, 'Were others really listening to what you had to say?'(LISTENY) had similar percentages of variance for the 'In flow' and 'No flow' respondents (27.44% and 25.30% respectively). The third, 'Did you care what others were saying?' (CAREY) had the lowest percentage of variance (8.09%) for the 'In flow' group which was also the lowest in the sample.

S&T In Flow n=30	New Item label INTERACTION	S&T PFlow n=146	New Item Label INTERACTION	S&T No Flow n=52	New Item Label INTERACTION
64.47%	EXPRESSY	63.86%	EXPRESSY	57.80%	EXPRESSY
27.44%	LISTENY	18.46%	CAREY	25.30%	LISTENY
8.09%	CAREY	17.67%	LISTENY	16.90%	CAREY

[2]Table 4.4 ESF 1 % of variance for the Social and Talk related items (S&T)

In general terms, the relationships between the INTERACTION items suggest that respondents perceived themselves as able to express opinions and that others were taking them into account ie listening. One interesting point to note at this early stage in the analysis is the lower percentage of variance for self reports about caring about what others were saying, particularly for the 'In Flow' respondents. Their responses may have been related to the instructional methods used in this introductory lesson to the topic, which consisted mostly of whole class instruction (see lesson log in Appendix 5).

4.3.1.4 Correlations with Flow

The standardised (z) scores for the composite measures were used for computing the correlations with the standardised (z) scores for the measure of flow. This statistical process has two functions, firstly to standardise the scores of all the items so that they are all on the same scale, and secondly to facilitate the correlation with the standardised scores for flow (challenge and skill).

[2] The output for the percentages of variance for the S & T items in Table 4.4 is presented in Appendix 7, SPSS Output as follows: In Flow, page 237, PFlow, page 242 and No Flow, page 247.

In Flow		PFlow		No Flow	
Factor	FLOW Z score	Factor	Flow Z score		FLOW Z score
ENGAGE	-.00	SELFC	.11	SELFC	.26
SELFC	.12	ENGAGE	.17	ENGAGE	.10
POTENCY	-.36	MOTIV	.12	MOTIV	-.04
MOTIV	-.32				
INTERACTION	.26	INERACTION	.21*	INTERACTION	.03
* Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).					

Table 4.5 ESF 1 Correlations with Flow

Table 4.5 shows the results of the correlations between the measure for flow and the composite factors that emerged from the factor analysis; ENGAGE, SELFC, POTENCY, and MOTIV. One significant correlation with flow emerged; for the 'Pflow' group there was a significant correlation between moderate levels of challenge and skill and the talk related items (INTERACTION) ($p<.05$). As the initial statistics for challenge indicated a mean score of 4.89 in week 1, and the mean for skill was 5.92, it was expected that there would be minimal correlations with the flow variable at this stage. For flow to be achieved there needs to be combined scores for challenge and skill that are above 15.

4.3.2 ESF Week 2 Results

During week 1, the mean for challenge (4.89) was lower than that for skill (5.92) suggesting that the majority of the respondents perceived themselves to have ability and experienced positive moods but were not very challenged during the lesson. In this section, the results from the analysis of the ESFs in week 2 are presented to show if there were any significant differences to those of week 1.

4.3.2.1 Activity Related Items (AR)

Table 4.6 shows the results from the factor analyses for the scores on the activity related items for week 2 (item labels and questions are given on page

86). The mean score for challenge was 4.71 and the largest mean, 6.10, was for self reported skills. As for week 1, the majority of respondents perceived themselves as having the required skills but were not very challenged.

AR In Flow n=38	Item label	Factor Loading 75.77%	AR Pflow n=151	Item label	Factor Loading 68.26%	AR No flow n=72	Item label	Factor Loading 69.31%
Factor 1	ability	.93	Factor 1	involve	.82	Factor 1	good	.77
33.11%	involve	.89	23.60%	ability	.80	30.01%	expy	.76
INVOLVE-MENT	interest	.82	INVOLVE-MENT	control	.66	POTENCY	expo	.76
	enjoy	.81		success	.61	&	concen	.68
	control	.72				SELFC	success	.64
							impy	.49
Factor 2	impy	.76	Factor 2	expy	.77	Factor 2	involve	.81
22.67%	expy	.71	23.05%	concen	.76	23.31%	enjoy	.73
MOTIV	-wishdoe	-.71	SELFC	expo	.73	INVOLVE-MENT	ability	.67
							control	.58
Factor 3	good	.83	Factor 3	interest	.76	Factor 3	-wishdoe	-.90
19.98%	success	.74	21.61%	-wishdoe	-.74	15.99%	interest	.61
SELFC	expo	.74	ENGAGE	enjoy	.72	MOTIV		
	concen	.68	&	impy	.64			
			MOTIV	good	.50			

[3]Table 4.6 ESF 2 Factor Analysis for the Activity Related Items (AR)

The relationships between the variables provide different patterns to those in Week 1. The components for engagement for the 'in flow' group, being interested (interest) and enjoying the lesson (enjoy) load together with having ability (ability) and feeling in control (control) for factor 1(INVOLVEMENT) but without the item for concentration (concen), which is in factor three. Motivational items, ie the importance of the activity (impy) and personal expectations (expy) and not wishing to be doing anything else (a negative loading for wishdoe) made up the second composite factor, MOTIV. Factor 3 comprised of feeling good (good), being successful (success), fulfilling the

[3] The output for Table 4.6 is presented in Appendix 7, SPSS Output, as follows: AR In Flow, pages 248-250, AR PFlow, pages 251-253 and AR No Flow, pages 254-257.

expectations of others (expo) and perceptions of concentration (concen) and is labelled SELFC to denote components that reflect perceptions of competence and confidence.

The relationships between the measures for the 'Pflow' group indicate that the highest percentage of variance loaded together one of the engagement items, being involved (involve), together with the potency measures for perceptions of ability (ability), feeling in control (control) and being successful (success). The composite factor is identified as INVOLVEMENT. These are indications of competence and support the finding for the large mean score for Skill that was found in week 2. Factor two loaded together personal expectations (expy), fulfilling the expectations of others (expo) and concentration (concen). As these also suggest confidence in abilities, this factor is identified as SELFC. For factor 3, the engagement and motivation components were loaded together and identified as ENGAGE & MOTIV.

For the 'No flow' respondents, the items loaded together in yet another pattern of relationships. Although the loadings for the composite items were similar to those of the other groups, none of the components for engagement loaded together for factor 1. Instead, there were more that corresponded to competence and confidence. Factor 2 loaded together the two engagement items, enjoyment (enjoy) and being involved (involve) together with perceptions of ability (ability) and control (control) so was identified as INVOLVEMENT to denote engagement during the lesson. Factor 3 comprised of not wishing to be doing anything else (a negative loading for wishdoe) and being interested (interest) which had the lowest percentage of variance. As the item for being

interested had also loaded onto Factor 3 (MOTIV) for the 'PFlow' group, there was an indication that higher levels of skill may be associated with lower levels of interest.

4.3.2.2 Mood Related (MR)

Factor analysis did not reveal any pattern of relationships between the mood related items for week 2 (item labels given on page 89) and there were no expectations that there would be. However, moods were generally positive (see table of means in appendix 4) and significant relationships were not expected for the same reasons as before.

4.3.2.3 Social and Talk Related Measures (ST)

Table 4.7 shows the percentage of variance for the social and talk related items. They were loaded together as they were for ESF 1 as a composite item, INTERACTION. In week 2, the loadings are in the same order as they were for week 1. Some of the reasons for this similarity are related to issues connected with engagement highlighted earlier. These will be discussed in more detail in the summary section at the end of the chapter.

S&T In Flow n=38	New Variable INTERACTION	S&T PFlow n=151	New Variable INTERACTION	S&T No Flow n=72	New Variable INTERACTION
60.55%	EXPRESSY	64.25%	EXPRESSY	73.10%	EXPRESSY
30.95%	LISTENY	20.42%	LISTENY	20.52%	LISTENY
8.50%	CAREY	15.33%	CAREY	6.39%	CAREY

[4]Table 4.7 ESF 2 Percentage of variance for the social and talk related variables (S&T)

[4] The output for the percentages of variance for the S & T items in Table 4.7 is presented in Appendix 7, SPSS Output as follows: In Flow, page 258, PFlow, page 259 and No Flow, page 260.

4.3.2.4 Correlations with flow

Table 4.8 provides the results of the correlations between the composite items and the measure for flow. During this week, the balance of challenge and skill was not equal and skills were perceived as higher than challenge for the majority of the respondents. There were no significant correlations between flow and the composite items for the 'In flow' group. For the PFlow respondents, there was a significant correlation between moderate levels of challenge and/or skill and the combined factors for ENGAGE & MOTIVATION. For the 'No Flow' group, there were significant correlations between low levels of challenge and skill and the factors for INVOLVEMENT, MOTIVATION and INTERACTION. The indication is that lower scores for the composite items of reported involvement, motivation and interaction were associated with lower levels of challenge and skill for those not in flow.

In Flow		PFlow		No Flow	
New Label	**FLOW z score**	**New Label**	**Flow z score**	**New Label**	**FLOW z score**
INVOLVEMENT	-.06	INVOLVEMENT	.08	POTENCY & SELFC	.13
MOTIVATION	-.01	SELFC	.14	INVOLVEMENT	.29*
SELFC	.22	ENGAGE and MOTIVATION	.28**	MOTIVATION	.36**
INTERACTION	.11	INTERACTION	.06	INTERACTION	.39**
* Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).					

Table 4.8 ESF 2 Correlations with Flow

4.3.3 ESF Results Weeks 3 and 4

4.3.3.1 Activity Related Items (AR)

Table 4.9 shows the factor loading patterns for the AR measures for the third and fourth weeks. These items are identified as activity related because the

experiential dimensions are related to the activities in which the respondents were participating (item labels and questions are given on page 86). For the 'In Flow' group, factor 1 has the highest loadings for concentration (concen), fulfilling the expectations of others (expo) and feeling in control (control). These items reflect aspects of attentional features of cognitive behaviour noted earlier. Having ability, being interested and enjoying what they were doing also loaded together for factor 1. Feeling good (good) loaded together with a negative score for (wishdoe) for factor 2, indicating that they reported not wishing to be doing something else other than the musical activities during the lesson and is interpreted as indicating intrinsic motivation, (MOTIVATION).

AR In flow n=46	**Item label**	**Factor Loading 60.30%**	**AR Pflow n=117**	**Item label**	**Factor Loading 61.25%**	**AR No flow n=54**	**Item label**	**Factor Loading 68.44%**
Factor 1	concen	.83	Factor 1	interest	.91	Factor 1	success	.91
44.48%	expo	.82	60.63%	enjoy	.89	50.12%	control	.89
ENGAGE&	control	.79	ENGAGE	success	.83	ENGAGE	interest	.87
POTENCY	ability	.75	&	control	.82	&	involve	.81
	enjoy	.75	POTENCY	ability	.82	POTENCY	impy	.76
	involve	.73	&	expo	.82		expo	.76
	interest	.72	MOTIV	good	.80		good	.75
	expy	.69		concen	.78		concen	.75
	success	.52		involve	.76		expy	.69
	impy	.52		impy	.70		ability	.60
				expy	.67			
				-wishdoe	-.55			
Factor 2	- wishdoe	-.73				Factor 2	+wishdoe	.87
15.82%	good	.61				18.32%		
MOTIV						MOTIV		

[5]Table 4.9 ESF 3 and 4 Factor Analysis the Activity Related Items (AR)

For the 'Pflow' respondents, all the items that measured the extent of the respondents' reports of their experiential dimensions during the lesson loaded together. Being interested (interest) and enjoyment (enjoy) had the highest loadings. Being successful (success), feeling in control (control), having ability (ability) and concentrating (concen) had similar loadings to those for the 'In flow'

[5] The output for Table 4.9 is presented in Appendix 7, SPSS Output, as follows: AR In Flow, pages 261-263, AR PFlow, pages 270-271 and AR No Flow, pages 277-279.

group. Being involved (involve), fulfilling one's own expectations (expy) and the perceived importance of the activities (impy) also had lower loadings. The lowest loading was for the item that indicated that they had not wished to be doing anything else (a negative loading for wishdoe).

For those who did not score highly for flow (the 'no flow' group), being successful (success) had the highest loading and having ability (ability) had the lowest. Enjoying the lesson (enjoy) did not load onto either factor. These respondents also reported that they had wished to be doing something else (a positive loading for wishdoe). This suggests that the participants did not feel particularly motivated during the lesson and may have lacked the skills.

4.3.3.2 Mood Related Items (MR)

Table 4.10, on the following page, shows the factor loadings for the mood related items which present patterns of relationships that had not emerged before (item labels are given on page 89). Although there are some similarities in the loadings between the 'In Flow', 'PFlow' and 'No Flow' groups to indicate similarities in perceptions of emotional well-being between the groups but there are also differences. One reason for why these factors emerged for the first time may be related to the higher instances of reported flow experience.

MR In flow n=46	Item Label	Factor loading 68.97%	MR Pflow n=117	Item Label	Factor Loading 62.66%	MR No Flow n=54	Item Label	Factor loading 74.55%
Factor 1	Excited	.85	Factor 1	Open	.82	Factor 1	Open	.90
35.21%	Cheerful	.84	46.03%	Clear	.80	41.80%	Active	.88
PERSONAL	Proud	.79	PERSONAL	Proud	.77	PERSONAL	Excited	.81
&	Alert	.78	&	Cheerful	.75	&	Cheerful	.81
EFFICACY	Involved	.75	POSITIVE	Alert	.74	POSITIVE	Alert	.79
	Active	.70	AFFECT	Excited	.74	AFFECT	Happy	.77
	Open	.63		Cooper-ative	.72		Cooper-ative	.64
				Active	.72			
Factor 2	Happy	.79		Involved	.70	Factor 2	Clear	.85
20.21%	Relaxed	.75		Happy	.70	23.67%	Proud	.68
POSITIVE	Cooper-ative	.64		Relaxed	.59	EFFICACY	Relaxed	.67
AFFECT	Clear	.48	Factor 2	**Lonely**	**-.86**			
			16.64%	**Weak**	**-.80**			
Factor 3	**Weak**	**-.87**	SOCIABLE &			Factor 3	**Weak**	**.59**
13.55%	**Lonely**	**-.80**	EFFICACY			9.09%	**Involved**	**.58**
SOCIABLE						SOCIABLE	**Lonely**	**.91**

[6]Table 4.10 ESF weeks 3 and 4 Factor Analysis for the Mood Related Items (MR)

An important difference between each of the groups was the loadings for the 'involved↔uninvolved' item. For the 'In Flow' respondents, the item is loaded on to factor 1. For the 'Pflow' group, it loaded onto factor 1 but lower down and for the 'No Flow' respondents loaded onto factor 3 together with the items related to sociability and effectiveness ,'weak↔strong' and 'lonely↔in a group'. 'No Flow' respondents indicated positive responses to these items suggesting a relationship with feeling weak and not being part of a group. Of further interest is the finding that enjoyment item for this group did not load anywhere in the patterns of relationships.

4.3.3.3 Social and talk related Measures

The third set of measures, social and talk related, reflected the respondents' perceptions of social interaction during the group composition activities that took place in the lessons. These items were grouped together in week 2 to provide a

[6] The output for Table 4.10 is presented in Appendix 7, SPSS Output, as follows: MR In Flow, pages 264-267, MR PFlow, pages 272-274 and MR No Flow, pages 280-281.

composite item, identified as INTERACTION. However, there was a difference in the percentage of variance. The highest percentage of variance occurred for, 'Were you able to express your opinions?' for the 'In flow' group and the 'PFlow' group (61.81% and 75.36% respectively). For the 'No flow' group, 'being listened to' accounted for the highest percentage of variance (64.18%) and 'being able to express your opinions' accounted for the lowest percentage of variance (10.35%). In previous lessons, ie when the main activity had not been group composing, the percentage of variance for the 'No Flow' group for perceptions of being listened to (LISTENY) was considerably lower (ESF 1- 25.30%, ESF2- 20.52%) than that for ESF 3 and 4 (64.18%). The percentage of variance for the item that measured perceptions of caring about what others said (CAREY) is also higher for ESF 3 and 4(25.47%). In ESFs 1 and 2 this was 16.90% and 6.39% respectively. The item for perceptions about being able to express opinions accounted for the lowest percentage of variance (10.35%). For ESFs 1 and 2 the percentage was 57.80% and 73.10% respectively.

S&T In Flow n=46	New label INTERACTION	S&T P Flow n=117	New label INTERACTION	S%T No Flow n=54	New label INTERACTION
61.81%	EXPRESSY	75.22%	EXPRESSY	64.18%	LISTENY
27.20%	LISTENY	18.68%	LISTENY	25.47%	CAREY
10.99%	CAREY	6.10%	CAREY	10.35%	EXPRESSY

[7]Table 4.11 ESF weeks 3 and 4 Percentages of variance for the social and talk related Items (S&T

It would appear that these differences in perceptions of the emphasis given to the type of interaction reported by the groups may be related to the extent to which they felt valued (ie others were really listening), cared what others said or

[7] The output for the percentages of variance for the S & T items in Table 4.11 is presented in Appendix 7, SPSS Output as follows: In Flow, page 268-269, PFlow, page 275 and No Flow, page 282.

felt able to express their ideas during the group composing lessons. The extent to which these interactional dimensions of experience are related to perceptions of enjoyment, challenge and skills will be important considerations when presenting the analysis and findings of the analysis of talk.

4.3.3.4 Correlations with Flow

Table 4.12 below shows the results of correlations between the standardised scores for the flow measure and the composite items.

In flow: n=46		**PFlow n=117**		**No Flow n=54**	
New Factor z score	FLOW z score	New factor z score	Flow z score	New Factor	FLOW z score
1.ENGAGE & POTENCY	.51**	1. ENGAGE, POTENCY & MOTIV	.40**	1. ENGAGE & POTENCY	.04
2. MOTIV	.20			2 MOTIV	.04
3. PERSONAL & EFFICACY	-.51	2. PERSONAL & POSITIVE AFFECT	-.18*	3. PERSONAL & POSITIVE AFFECT	-.02
4. POSITIVE AFFECT	.08	3. SOCIABLE & EFFICACY	-22**	4. EFFICACY	-.37
5. SOCIABLE	.10			5. SOCIABLE	.31*
INTERACTION	.57**	4. INTERACTION	.29**	6. INTERACTION	.28*
* Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).					

Table 4.12: ESF weeks 3 and 4 Correlations with the Flow Measure

For the 'In flow' respondents, there was a significant correlation between high levels of challenge and skill and factor 1 ($p<.01$) which was made up of the majority of items that indicated perceptions of cognitive efficiency (shown in table 12 as ENGAGE and POTENCY) and between factor 5 (INTERACTION)

which comprised of talk related items ($p<.01$). For the 'PFlow' group, there were correlations between moderate levels of challenge and skill and all of the composite items.

For the 'No flow' group, there was a positive correlation between low levels of challenge and skill and responses to perceptions of participation ($p<.05$) and a positive correlation between the interactional items ($p<.05$). This suggests that low levels of challenge and skill may be associated with perceptions of not regarding themselves as part of a group and is supported by the responses from this group that indicated that being really listened to was more valued than expressing ideas (ie accounted for a higher percentage of variance). This group had also reported wishing to be doing something else in this lesson.

4.4 Analysis of PFlow Group for weeks 3 and 4

This part of the analysis explored further the experiential dimensions of respondents identified as possibly experiencing flow ie reporting scores of between 9 and 14 for the combined items for challenge and skill. There were a large number of respondents' scores that occurred in this part of the range in all the lessons and it was anticipated that additional statistical analysis would reveal further information about the relationships between the items to provide some indications as why they had not reported higher levels of challenge and skill.

In the course of preparing the data from the self reports for analysis, the responses for the challenge and skill items showed a mismatch between the respondents' perceptions of their skill and the extent to which that they felt challenged. It was deemed necessary to look further into the data to come to some conclusions about the extent to which their other responses on the forms

revealed any significant relationships between the challenge and skill responses to determine why this might be the case. As this research is concerned with children's experiences of group composing, the focus for the additional analysis was on the self reports completed after the lessons when the main activity was group composing in weeks three or four.

For this part of the analysis, the responses from the ESFs enabled the PFlow group to be categorised into two sub groups as follows:

- AFlow: high challenge/low skill. This group comprised of respondents who reported scores of more than 5 for Challenge but less than 5 for skill with a maximum combined score of 14 and minimum of 9. The letter A denotes Anxiety and identifies those participants who reported that they found the musical activities challenging but perceived themselves as not having a high level of skill. The analysis will investigate the extent to which these respondents experienced anxiety and test for significant correlations with their scores for other mood and activity related items on their self reports.

- BFlow: low challenge/high skill. Respondents in this group reported scores of less than 5 for challenge and more than 5 for skill with maximum combined score of 14 and minimum 9. The letter B indicates boredom and identifies participants who reported that they perceived themselves to have the skills to participate in the musical activities but felt they were not particularly challenging. The analysis will explore the extent to which these respondents experienced boredom and test for any

significant correlations with the scores for the other mood and activity related items on their self reports.

Figure 4.1 at the beginning of this chapter illustrates the how the combinations of challenge and skill can be related to the experiential dimensions referred to above. The stages of analysis followed the same pattern as those for week 2 and the results are shown in tables 4.13-4.16.

4.4.1 Activity Related Measures

Table 4.13 shows the factor loadings for both groups (the item labels and questions are on page 86).

AFlow High challenge Low Skill n=51	**Item Label**	**Factor Loading 73.13%**	**BFlow Low Challenge High Skill n=66**	**Item Label**	**Factor Loading 67.84%**
Factor 1 27.83% POTENCY	involve control expo concen	.85 .84 .70 .65	Factor 1 38.52% POTENCY	involve success control ability good expo concen	.88 .85 .83 .73 .66 .65 .60
Factor 2 27.52% ENGAGEMENT	ability success enjoy good interest	.90 .78 .64 .62 .59			
Factor 3 18.08% INTRINSIC MOIVATION	wishdoe expy impy	-.76 .72 .63	Factor 2 29.32% INVOLVEMENT (Engagement and Intrinsic Motivation	impy enjoy interest wishdoe expy	.81 .75 .75 -.71 .56

[8]Table 4.13 ESF 3 and 4 Factor Analysis for the Activity Related Items (AFlow* and BFlow)**

*AFlow respondents were those who scored more than 5 for challenge and less that 5 for skill.

**BFlow respondents were those who scored less than 5 for challenge and more than 5 for skill.

[8] The output for Table 4.13 is presented in Appendix 7, SPSS Output, as follows: AFlow, pages 283-285, BFlow, pages 291-293.

The highest loading in factor 1 for the high challenge/low skill (AFlow) group was the item for being involved (involve). The other items loading onto this factor are those for feeling in control (control), fulfilling the expectations of others (expo) and concentration (concen). The factor was identified as POTENCY as the loadings suggested that respondents perceived themselves as being able to participate effectively. Factor 2 was identified as ENGAGEMENT as the loadings included ability (ability), being successful (success), enjoyment (enjoy), feeling good (good) and being interested (interest). Factor 3 included a negative loading for wishdoe, suggesting that respondents did not wish to be doing something else. Factor 3 also loaded together fulfilling own expectations (expy) and perceptions of importance (Impy). The factor was identified as INTRINSIC MOTIVATION. For this group, perceptions of higher levels of challenge seem to be associated with involvement and concentration.

Two factors emerged for the low challenge/high skill group (BFlow). Factor 1 loaded together being involved (involve), being successful (success), feeling in control (control), feeling good (good), fulfilling others expectations (expo) and having ability (ability). Three of these items, being involved (Involve), being in control (control) and fulfilling others expectations (expo) had loaded together for the high challenge/low skill group so Factor 1 was also labelled as POTENCY. Factor 2 loaded together all the other items and was identified as ENGAGEMENT and INTRINSIC MOTIVATION. For this group, higher levels of skills seem to be associated with perceptions of success and ability.

4.4.2 Mood Related Measures

Table 4.14 shows the factor loadings for the mood related (MR) items for both groups and measured emotional well-being (item labels are given on page 89).

MR AFlow High challenge/ Low Skill	Item Label	Factor Loading 75.24%	MR BFlow Low challenge/ High skill	Item Label	Factor Loading 72.17%
Factor 1 48.52% POSITIVE AFFECT and EFFICACY	Proud	.88	Factor 1 39.68% POSITIVE AFFECT and EFFICACY	Cheerful	.86
	Clear	.84		Involved	.86
	Excited	.82		Happy	.83
	Relaxed	.81		Open	.78
	Alert	.80		Clear	.76
	Open	.80		Cooperative	.73
	Happy	.75		Proud	.73
	Involved	.74		Alert	
	Cooperative	.71	Factor 2 18.68% AROUSAL	Excited	.75
	Cheerful	.71		Relaxed	.69
	Active	.70		Active	.67
Factor 2/3 (12.12% +11.56%) SOCIABLE	Lonely	-.89	Factor 3 13.80% SOCIABLE	Lonely	.85
	Weak	-.84		Weak	.83

[9]Table 4.14 ESF 3 and 4 Factor Analysis for the Mood Related Items (AFlow* and BFlow)**

*AFlow respondents were those who scored more than 5 for challenge and less that 5 for skill.

**BFlow respondents were those who scored less than 5 for challenge and more than 5 for skill.

For the high challenge/low skill (AFlow) group, factor 1 loaded together all the items apart from 'lonely' and 'weak' and was designated as POSITIVE AFFECT ('proud', 'clear, 'excited', 'relaxed', 'alert' , 'open' , 'happy', 'cheerful' and 'cooperative',) and EFFICACY ('clear', 'active', 'involved'). Factor 2 and Factor 3 (combined) showed negative loadings for 'lonely' and 'weak' and was identified as SOCIABLE to indicate respondents' perceptions of how sociable they perceived themselves to be.

[9] The output for Table 4.14 is presented in Appendix 7, SPSS Output, as follows: AFlow, pages 286-288, BFlow, pages 293-295.

For the low challenge/high skill group, the items loaded together to provide three factors. The highest loading in factor 1 was for 'cheerful' followed by 'involved', 'happy', 'open', 'clear', 'cooperative' and 'proud' and 'alert'. These measures had loaded together in a similar pattern for the high challenge/low skill group so factor 1 was also identified as POSITIVE AFFECT ('cheerful', 'happy', 'open', 'cooperative' and 'proud') and EFFICACY ('involved' and 'clear'). Factor 2 showed positive loadings for 'excited', 'relaxed' and 'active' identified as AROUSAL. The lowest loadings were for Factor 3, which comprised of 'weak' and 'lonely' and was identified as SOCIABLE. These loadings were positive to indicate that the respondents in this group were not feeling strong and did not feel part of the group active' and 'excited' and was identified as AROUSAL. The output for Table 4.14. is in Appendix 6, Section pg

4.4.3 Social and Talk Related Measures

The third set of measures, social and talk related, were the respondents' perceptions of their experiences of social interaction during the group composition lessons. Table 4.15 shows the percentage of variance for these items for the AFlow and BFlow groups. The combined items are referred to by a new item label in table 4.15 as INTERACTION.

S&T AFLOW High Challenge/ Low Skill	New Item Label INTERACTION	S&T BFLOW Low challenge/ High Skill	New Item label INTERACTION
73.35%	LISTENY	74.55%	EXPRESSY
21.51%	EXPRESSY	20.31%	LISTENY
9.44%	CAREY	5.15%	CAREY

[10]Table 4.15 ESF weeks 3 and 4 percentage of variance for the Social and Talk related measures (AFlow and BFlow)

[10] The output for Table 4.15 (S&T items) is presented in Appendix 7, SPSS Output, as follows: AFlow, page 289, BFlow, page 296.

4.4.4 Correlations with Flow

High Challenge/Low Skill (AFlow) Correlation with Flow N=51		**Low Challenge/High Skill (BFlow) Correlation with Flow N=66**	
AR Factor 1 POTENCY	.22	AR Factor1 POTENCY	**.35****
AR Factor 2 ENGAGEMENT	.08	AR Factor 2 INVOLVEMENT	**.25***
AR Factor 3 INTRINSIC MOTIVATION	**.46****		
MR Factor 1 POSITIVE AFFECT and EFFICACY	**-.36***	MR Factor 1 POSITIVE AFFECT and EFFICACY	-.01
MR Factor 2 SOCIABLE	-.11	MR Factor 3 SOCIABLE	**-.33****
		MR Factor 2 AROUSAL	.13
ST Factor 1 INTERACTION	.28	ST Factor 1 INTERACTION	.25*
*** Correlation is significant at the 0.05 level** ****Correlation is significant at the 0.01 level**			

Table 4.16 ESF weeks 3 and 4 Correlations with the Measure for Flow

For the high challenge/low skill group, the highest percentage of variance (73.35%) was accounted for by the item that measured self reports of the extent that respondents in the AFlow group felt that others were really listening to them (LISTENY). For the BFlow group, the highest percentage of variance (74.84%) was accounted for by the item that measured their perceptions of being able to put forward ideas and opinions (EXPRESSY).

Table 4.16 shows the results of correlations between the standardized score for flow with each factor. For the AFlow group, there was a significant positive correlation between perceptions of high levels of challenge and low skills and factor 3, INTRINSIC MOTIVATION ($p<.01$) and a negative significant correlation between factor 1, POSITIVE AFFECT and EFFICACY ($p<.05$).

There was a significant correlation between reported high challenge/low skills and INTRINSIC MOTIVATION ($p<.01$) and a negative correlation for POSITIVE AFFECT and EFFICACY ($p<.05$). For BFlow group, there were significant positive correlations between perceptions of low challenge/high skill and Factor 1, POTENCY ($p<.01$), Factor 2, INVOLVEMENT ($p<.05$) and INTERACTION ($p<.05$). There was a negative correlation between perceptions of low challenge and high skill for AROUSAL ($p<.01$).

The significant relationships for the AFlow group suggest that intrinsic motivation is related to perceptions of high challenge and low skills but positive moods are not. The significant relationships for the BFlow group suggest that perceptions of potency (ie ability), being involved and talking with others is associated with perceptions of high skill and low challenge but being stimulated is not.

The final stage in the statistical analysis was to see which experiential dimensions contributed most significantly to flow for the 'In Flow' group and the results are presented below.

4.5 Regression Analysis

Stepwise multiple regression was conducted to investigate which of the experienetial dimensions were predictors for flow. The results are presented in Table 4.17. It shows the regression co-efficient (B), the standard error of B, and the standardized coefficient beta for the experiential dimensions that had been found to significantly correlate with the measure for flow (ie ENGAGEMENT & POTENCY and INTERACTION in Table 4.12).

ENGAGEMENT and POTENCY	Multiple R	B	Std Error	Beta	t	Significance of t
expy	.572(a)	.572	.109	.328	4.836	**.000**
interest	.629(b)	.386	.147	.216	2.619	**.009**
concen	.642(c)	.359	.145	.191	2.481	**.014**
INTERACTION						
EXPRESSY		.407	.137	.414	2.980	**.005**

[11]Table 4.17 ESF 3 and 4 Regression (In Flow Group)

Step-wise multiple regression of the ENGAGEMENT and POTENCY Factor indicated that perceptions of having high expectations of oneself (expy), finding the lesson interesting (interest) and being able to concentrate (concen) were the most significant predictors for flow and together accounted for 41% of the total variance. Of the INTERACTION items, being able to express opinions (EXPRESSY) was the most significant predictor and accounted for 17% of the total variance.

A summary of the results from the statistical analysis of the ESFs now follows and draws together the main findings.

[11] Further explanation and clarification of the regression analysis, together with the output, is provided in Appendix 7, pages 297-300

4.6 Summary of the Results

4.6.1 Results of the Analysis of the ESFs for Week 1

One significant positive correlation ($p<.05$) was identified, that between the measure for flow and the items related to interaction, but only for those who *may* have experienced flow (ie the PFlow group). No other significant correlations were significant.

4.6.2 Results of the Analysis of the ESFs for Week 2

No significant correlations between the measure for flow and any composite item/factor were found for those that reported having had a flow experience. One significant positive correlation ($p<.01$) between the flow measure and the factor for involvement was found for those who *may* have experienced flow (ie PFlow group). For those who did *not* report experiencing flow there were three positive correlations:

1. between minimal levels of challenge and skill and their reported engagement with the activity ($p<.05$)
2. between minimal levels of challenge and skill and motivation to do the activity ($p<.01$)
3. between minimal levels of challenge and skill and interaction with others during the activity ($p<.05$)

4.6.3 Results of the Analysis for Weeks 3 and 4

For those who did experience flow there were two significant positive correlations: between the flow measure and engagement and potency ($p<.01$) and between flow and Interaction ($p<.01$)

For those in the high challenge/low skills group, there was a positive correlation between the flow measure and Intrinsic Motivation ($p<.01$) and negative correlations between the flow measure and Positive Affect and Efficacy ($p<.05$).

For those in the high skills/low challenge group there was a positive correlation between the flow measure and potency ($p<.01$), flow measure and involvement ($p<.05$) and between the flow measure and interaction ($p<.05$). There was a strong *negative* correlation ($p<.01$) between flow and the sociable dimension.

For those who did not experience flow, there was a significant positive correlation between minimal challenge and skill and the Sociable factor and between minimal challenge and skill and the Interaction factor ($p<.05$ respectively).

4.7 Interpretation of the Results

The pupils' self-reports of their activities and emotional well-being during lessons in which they engaged in collaborative musical activities were recorded on Experience Sampling Forms (ESFs) and these responses provided the data for the quantitative analyses reported in this chapter. The most important conditions for flow have been theorised as a high and equal balance of challenge and skill (Hektner et al 2006). The analysis of the ESFs here provided

indications that this expected relationship may well have occurred for at least some of the respondents in this study.

Findings from the factor analysis indicated relationships between concentration, interest and self esteem (as shown by respondents' perceptions of living up to their own expectations, being interested, concentrating and being able to express opinions) that were found to be significant predictors for the occurrence of flow during the weeks when the main activity was group composing.

For those who experienced flow, the responses to the question 'Were you able to express your opinions?' accounted for most of the percentage of variance and this item was also found to be a significant predictor for flow. For those who perceived themselves to have had low levels of challenge and skill, responses to the question, 'Were others really listening to you?' accounted for most of the variance.

It would seem that higher levels of challenge and skill (and consequently of flow) are associated with feeling able to express opinions in group situations. The percentage of variance in the responses to this question for those who did not report flow was low, suggesting that they may not have been as assertive and needed more attention from others in the group.

The analysis then focused on self reports of those who reported higher levels of challenge than skill or vice versa to look for evidence to suggest why they did not experience flow but may have come close. This was prompted by the wide deviations in the mean scores for these items (see table 4.2 at the beginning of

this chapter). This was considered to be an important aspect of the analysis because a large proportion of the respondents reported a mismatch between their levels of challenge and skills in every lesson. The results provided a detailed view of the experiential dimensions to indicate significant differences in the self reports of those who reported high challenge/low skill and those who reported low challenge/high skill. The dimensions for flow discussed and illustrated in Figure 4.1 at the beginning of this chapter indicated that for flow to occur the balance of perceived challenge and skill should be high.

Factor analysis revealed differences in the patterns of relationships between the two groups. The high challenge/low skill group revealed the highest loadings on the factor that included the items for concentration, involvement, control and perceptions of fulfilling the expectations of others. This composite of items was identified as POTENCY. The responses of the high skill/low challenge group reported similar perceptions of POTENCY but with one exception, the item for concentration (concen). This finding suggests that participants in both groups perceived themselves to be working effectively but those who scores reflected low challenge were not concentrating as much.

There were also differences in perceptions of emotional well-being and the factor analysis revealed differences in the patterns of relationships between the two groups. The items for the high challenge/low skill group loaded differently to those of the high skill/low challenge group. For the former, all the mood related items loaded together apart from those related to sociability. The high skill/low challenge group revealed a more complex arrangement. The highest loadings occurred for positive mood and efficacy, the next for sociability and the

third for arousal. The factor arrangement here suggests that the participants with higher skills than challenge were not as stimulated and sociable as the other group.

The interaction factor loaded together the items for the social and talk related measures across the whole sample. For the high challenge group, being listened to accounted for the highest percentage of variance. For the high skill group, being able to express their opinions accounted for most of the percentage of variance. In the regression analysis, the Interaction item, 'Were you able to express your opinions?' had been found to be a significant predictor for flow and seems to be related to higher levels of skill rather than challenge.

Correlations between the flow measure and factored items revealed that there was a significant positive correlation ($p<.01$) with flow for factor 1for the high challenge/low skills group to suggest that high challenge is related to motivation. As they reported having low skills, it would appear that being challenged was not sufficient for a flow state to be achieved. There was a significant negative correlation ($p<.05$) between the flow measure and the dimensions for positive affect and efficacy which suggests negative emotions may be related to perceived lack of skill.

For the high skill/low challenge group, there was a very significant positive correlation ($p<.01$) between flow and potency suggesting that the experiential dimensions included in these factors are related to ability. There was a significant positive correlation ($p<.05$) between flow and the combined factors of engagement and motivation indicating that higher levels of skill are associated

with engagement. However, there was a significant negative correlation ($p<.01$) between flow and arousal, which indicates that although they had ability and were motivated during the lessons they may not have felt very stimulated. There was a significant positive correlation ($p<.05$) between flow and INTERACTION to suggest that they felt able to interact with others, again suggesting confidence in their ability.

Further indications of the differences between groups of the participants were revealed when comparing the results for those in flow with those who may have experienced flow. For those in flow, there was a very significant positive correlation ($p<.01$) between flow and the composite factors of ENGAGEMENT and POTENCY. These factors did not significantly correlate with the flow measure for those who reported higher perceptions of challenge than skill. For those who reported higher skills than challenge there was a significant positive correlation between flow and the composite factor for engagement and motivation but not for potency suggesting that those who perceived themselves to have higher skills than challenge were engaged but not sufficiently to maintain flow. There was a very significant *positive* correlation ($p<.01$) between flow and the Interaction items for those in flow. The Interaction items were not found to be significant for respondents who were more challenged than skilled.

In conclusion, the findings from the analysis of the quantitative data from the ESFs provided evidence to suggest that some pupils achieved a state of flow during a number of lessons. For these respondents, the experiential dimensions associated with flow were high engagement, potency and social interaction. Pupils who reported low levels of challenge and/or skill may not have

experienced flow because some of the essential components were missing. For example they may not have felt very assertive and therefore were unable to express themselves, lacked concentration, may not have enjoyed the lesson and/or were not very interested. Of particular importance is the significance of the interaction items. It would seem that the social aspects of musical participation had some bearing on the extent to which flow was experienced and sustained so will be explored further by looking at the interaction between some of the respondents during the lessons in weeks three and four as they worked together in groups. The next chapter presents the analysis and findings of the analysis of 11 episodes of talk to discuss this finding in more depth.

Chapter 5

Analysing Flow Experience: Group Talk

5.1 Introduction

This chapter presents the analysis of selected episodes of talk that were transcribed from the interactions of eleven small groups of pupils in weeks three and four of the data collection period. The purpose of this part of the research was to investigate how group talk might be seen to reflect the dimensions of experience that had been found to be significant for flow to be achieved. It addresses the second research question:

'How is group talk is associated with flow experience?'

5.2 Approach to the analysis

As indicated in Chapter 3, preparing the data for closer analysis was approached in three steps. The first involved studying the video recordings of each small group as they worked together to prepare, rehearse and perform their compositions (either week three or week four), depending on when group work was the main activity. Previous lessons had been comprised of teacher led whole class activities to introduce the topics (week1) together with associated listening and singing (week 2). As this research is about flow experience in group music making, the sessions

where the main activity was group composing were the focus for the data for the talk analysis (weeks 3 and 4).

The next step was to transcribe the talk of each group session (n = 11) and to prepare commentaries on the progress of each group that provided a basis for selecting which episodes would be most appropriate for further detailed analysis of talk and the extent to which they included the participants who had reported flow experience.

The third step was to select episodes from all of the videoed sessions for detailed analysis. This was informed by the role of the talk in the overall embedded correlational research design to elaborate the findings of the self-reports. The episodes presented in this chapter reflect the range of responses on the ESFs, i.e. episodes showing the input of participants who reported flow, episodes where none of the participants in a particular group reported flow, and episodes where respondents had reported high levels of challenge and low levels of skills or vice versa.

5.3 Analysing the Episodes

Chapter 3, Section 3.5.2 provided an overview of how the observational data were analysed and elaborated. Tables 5.1-5.3, displayed on the following pages, show how sociocultural discourse analysis was used to explore the episodes and how Mercer's (2004) descriptors were integrated into the analysis. The role of the descriptors, exploratory, cumulative and disputational talk, provided a guide to

describing the nature of the talk produced in the episodes, in terms of the quality of the dialogue. Each episode of continuous dialogue represented a unit of analysis where a relevant aspect of the composition process was initiated for group discussion, developed and then resolved or a move to a new aspect was initiated. The descriptors were used to characterise the development of the talk within these units of analysis.

The descriptors for three types of talk, originally developed for analysing verbal interaction during computer-based activities, were adapted for studying processes of interaction and collaborative activity in the music classroom (Mercer, Littleton and Wegerif, 2004). This was deemed to be necessary because the interactions observed in the current study did not always involve verbal communication. Instead, participants were frequently seen to sing or play to each other to confirm agreed musical ideas through repetition, to demonstrate new ones or to show disagreement with what others have played or sung. Instances where this kind of musical interaction occurred are accounted for in the analysis by including explanations of how ideas were communicated, i.e. through playing and singing as well as through discussion. Non verbal musical interactions were integrated into Mercer's (2004) cumulative, exploratory or disputational descriptors (See tables 5.1-5.3). Other research into musical collaboration has recognized the relationship between talk and music in collaborative settings (eg Miell and MacDonald, 2000) and this is acknowledged in this study by integrating such instances of musical interaction into the descriptors of the talk. The design for this study involves comparisons of episodes of the *musical activity* of groups with the results from quantitative analysis of participants' self reports.

The first column in each table below shows the type of talk, together with the abbreviation used for the analysis. The second column describes the features of talk within that descriptor and the third column provides talk samples drawn from the transcriptions. Chapter 3, Section 3.6 described how the talk within each unit of analysis was related to each of the descriptors and their features were tested for inter-rater reliability.

In Table 5.1, the descriptor for exploratory talk is given together with examples of sequences of talk taken from the transcripts to exemplify how the participants engaged critically yet constructively with each other. Table 5.2 is arranged in the same way for cumulative talk to account for the ways in which the participants were seen to engage positively yet uncritically with each other. Table 5.3 shows the descriptors and examples of disputational talk, where it was seen that participants were in disagreement with each other or making decisions made without prior discussion/reasoning with the other member of the group.

The analysis is presented in three main sections by year group, i.e. Year 7, Year 8 and Year 9. Each year group was involved in a different topic and task according to the schemes of work set by their teachers. The year groups have different levels of experience of working within groups for music, where Year 7 participants have the least experience and Year 9 participants have the most. It was important to take this background information into consideration when analysing the episodes.

Table 5.1: Descriptors for Exploratory Talk: where participants engage critically but constructively		
Descriptor	**Features**	**Examples**
Ee Statements/suggestions are offered for joint consideration	Suggesting what to play, sing or what instrumentation to use. These are considered by other group members	Ry: you two do it and then I'm doing that little tune in the middle than you two need to do yours (indicates Stacey and Charlotte) then at the end and then just carry on Zo: right let's try it
Ef Challenge/counter challenge	Challenging or questioning what has been suggested by providing and justifying alternatives	James: can't you do it higher Megan: no no no it sounds better when it's lower as well
Eh Active participation	Exploring and/or developing ideas through talk or by playing or singing musical ideas	Ry: right one two three four (pupils play) Zo: we need to just practice that a bit more Ry: cause Calumn didn't stop
Ej Knowledge is made accountable and reasoning is visible in the talk and through playing and demonstrating	Ideas are explained and understood and are demonstrated through playing or singing	Hayley: and then Kat come and do an opera bit (sings lyrics in an operatic voice) Leo: I reckon we should take that out and then put in Anthony: we can go a bit minor there
Es Self revision	Participants develop ideas by trial and error by re-working ideas or through repetition by playing or singing again to revise the patterns of notes and/or lyrics	Lucy: (sings) I am standing I'm standing ... no I am ... (sings) I am stand+.. I'm ..oh yeah I'm....(sings) I am standing in the puddle ... in a Emma: (sings) puddle Lucy: (sings) and my toes are getting wet ... because these bullies are being mean and they make me cry ... no and they make me sad ... huhhhhhhhh

Table 5.2 Descriptors for Cumulative Talk: where participants build positively and uncritically on what others have said		
Descriptor	**Features**	**Examples**
Ca Thinking aloud	Verbalisation, singing or playing indicating internal thoughts about what is being said or played	Jade: right have we got anymore words anymore words to write down Lucy: right I thought about it (sings) I'm standing in a puddle and my feet are getting+...it's like motown [?] ... feet are getting wet coz these bullies are being
Cb Uncritical acceptance of others' suggestions	Statements, playing or singing that show participants are listening to and agreeing with each other	Eleanor: that sounds more spiritual Thomas: it does Lewis: it just needs to be a bit louder a bit
Cc Accumulating common knowledge	Singing, summarising or playing based on earlier agreement about how the music will sound	Ryan: I've got a tune in the middle then the same at the end listen (Ryan plays drum)
Cd Demonstrating/ modelling to others	Showing ideas to the group	Jordan: right we need to think of another right so if it's celebration we kind of like improvise we just have a bit of a boogie (plays Xylophone)
Ce Seeking confirmation	Asking for confirmation about what has been said, played or sung	Megan: tell you what actually shall we just carry on Oliver: yeah Megan: start again Aaron: she'll come in and tell us anyway Megan: yeah she will won't she
Cf Affirmation	Supporting what others have suggested, either verbally, by playing or by singing	Eleanor:(sings) kama di dah Thomas: kama did dah Eleanor: kama did ah Nathan: that's better (to Lewis) two of them Thomas: right
Cg Agreement	Agreement about what will be played or sung	Lewis: how do we know when the end is? Eleanor: because I've just gone (sings) ooo kama di dah kama di dah kama di dah Thomas: (sings) yeahhhhhh Lewis: right Thomas: right okay Eleanor: one two three go (Thomas plays shaker) Thomas: right okay I thought I was going to beat you in (all play piece)
Ch Confirmation and elaboration	Confirming and developing ideas	Thomas: yeah that's right and then do (sings) kama di dahh Lewis: let's try this a minute
Ci: Repetition	Repeating ideas verbally, by singing or by playing	To: (sings) kuma sika laley kuma sika laley Jo: (joins in singing) kuma sika laley kuma sika laley Lo: (also joins in singing 'rude' words) (all stop together)

Table 5.3 Descriptors for Disputational Talk: where participants disagree		
Descriptor	**Features**	**Examples**
Da Unsuccessful initiation	Statements or questions are ignored by other members of the group	Megan: remember Aaron don't start once I've finished that one okay not before Lucy: I've just written it out Megan: James you start on cue ... James watch me and I'll nod at you when you need to start
Db Independent statement	Independent decision making that is not offered for discussion	El: hang on (sits down) no we can all chose our own beat no Vi: I want to hit something I don't want to go (indicates Guiro?) Eli: just all be silent on the call and response parts on the drum
DcMus Individual playing/Individualised decision making (eg 'I' statements)	Individuals make statements or play/sing music that does not include others. Use of 'I' statements to make decisions without consulting other members of the group	Elizabeth: right so what beat am I doing 1 2 3 4 5 1 2 3 4 5 Victoria: am I doing a 1 2 3 4 5 (all play but not together) Ella: stop Elizabeth: right okay right okay stop
Dd Assertion/counter assertion which includes commands	Negative statements about what others have said, played or sung Commands or directions that that are not discussed and appear to be ignored by others in the group	Jordan: right we need to think of another right so if it's celebration we kind of like improvise we just have a bit of a boogie (Jordan plays xylophone) Tom: no I'll start (Jordan continues to play) Tom: I'll start by going I'll start and I'll finish and you can join in and Louis can go (does 'happy face') Lewis: no

5.4 Year 7 Episodes

This section contains 3 episodes of Year 7 groups in the final session of the small group composing activities. Each episode is accompanied by discussion about how the findings from the quantitative analysis relate to this analysis of the interactional features of the talk. Scores for reported levels of challenge and skill (the measure for flow) for the participants are presented in the discussion sections of each episode. A transcription key is provided to guide the reading of the transcribed verbal and non-verbal interaction.

5.4.1 Episode 1 Cumulative and Exploratory Talk

Transcription Key for Episode 1

R:	Researcher	[text] [?]	best guess
T:	Teacher	xxx	inaudible
Ry:	Ryan (drum)	(text)	transcriber's commentary
Ch:	Charlotte (shaker)	CAPS	louder than surrounding speech
St:	Stacey (cymbal/Indian cymbals)	...	slight pause in turn
Ca:	Callumn (glockenspiel)		
Zo:	Zoe (glockenspiel)	‖	overlapping talk

Transcript 1 7L

579 Ry: I've got a tune in the middle then the same at the end listen
580 (Ryan plays drum)
581 Ca: right me and Zoe need to do it
582 Ry: this is hard isn't it (Ryan sings)
583 Zo: right just one sec me and ...
584 (Calumn plays)
585 Ry: Calumn
586 Zo: right just stop me and Calumn you just have a quick practice while us two do it on us own
587 Ca: one two three one
588 Zo: go
589 (Zoe and Calumn play)
590 St: you need to do it for longer do it then (Stacey plays)
591 Zo: right go
592 (Stacey continues to play)
593 Zo: no we're not practicing right come here as Stacey as we stop (picks up graphic score) and
594 (Researcher enters)
595 R: ok chaps sorry
596 Zo: as we stop and Stacey and Charlotte come in when Stacey and Charlotte do their last
597 bit me and Calumn come in again
598 Ry: mmmm
599 Zo: and
600 Ry: mmmm
601 Zo: with you (points to Ryan)
602 St: Ryan then Zoe
603 Zo: wait a minute
604 Ry: I'll do what I've just made up at the beginning but when I've done my first one two three
605 one two three then you's come in and I'll still carry on playing
606 Ca: you do three and you do the last bit just with more
607 Zo: right let's try it if you just try
608 R: Miss wants you to go back so if you're gonna practice it just very quick
609 Ry: yeah just quick right when I'm doing when I've done the first six that one two three one
610 two three you'se two carry in
611 Ca: you do one two three one two three again
612 Ry: you two do it and then I'm doing that little tune in the middle than you two need to do
613 yours (indicates Stacey and Charlotte) then at the end and then just carry on
614 Zo: right let's try it
615 Ry: right one two three four (pupils play)
616 Zo: we need to just practice that a bit more
617 Ry: cause Calumn didn't stop
618 R: is that done
619 Ca: yeah
620 R: very good you worked very hard on there and you were very good with that drum you
621 stopped bashing it didn't you thank you that is just brilliant stuff.

This episode occurred immediately after the group had been showing the teacher their progress. The teacher had also guided them about the presentation of the graphic score. Ryan's opening utterance begins a sequence of turns that exemplify cumulative talk, defined by Mercer as talk that 'builds positively and uncritically on

what others have said' (Mercer, 2004 pg 15). Ryan starts by demonstrating his part, 'I've got a tune in the middle then the same at the end listen' (line 579). His utterance is categorised as constructing common knowledge (Cc) because he is providing knowledge for the group by asking them to listen. Callumn's turn (line 581) follows and continues with two more examples of cumulative talk. The first is a confirmation (Ch), 'right' indicating he has listened to Ryan's part. The second is an elaboration (Ch), 'me and Zoe need to do it' because he is adding that Ryan's music needs to be played by other members of the group.

The cumulative sequence is continued by Zoe with two confirmations (Ch), 'right' (line 583 and line 586) and a command, 'just stop' (line 586) which, like Ryan's earlier command of 'Listen' at the end of his turn, enables her to *gain attention* to elaborate (Ch) Callumn's idea that they need to play the music, 'me and Callumn you just have a quick practice (referring to the others) while us two do it on us own' (line 586). In the next turn, Stacey extends Zoe's suggestion with an elaboration (Ch) 'you need to do it longer then' (line 590) which she also demonstrates (Cd) to show what she means.

In the next turn, Zoe's interruption, 'no we're not practising right '(line 593) initiates a move to exploratory talk because she follows her interruption by *providing her reasons* , 'come here as Stacey as we stop (picks up graphic score) and Stacey and Charlotte come in when Stacey and Charlotte do their last bit me and Callumn come in again' (lines 596-597). Through telling and showing (Ej), Zoe is justifying her points and making her reasoning accountable to the others by referring them to the graphic score. By using 'we' as in 'when we come in' and naming the others in

the group ie Charlotte, Stacey and Callumn, Zoe is also encouraging joint consideration of what should be played (Ee).

The next five turns show how Ryan, Zoe and Stacey are creating common knowledge as they consider the score (lines 598-602). Ryan uses 'mmm' (lines 599 and 601) to show active listening and the knowledge is made accountable (Ej) in that Zoe points to Ryan whilst referring to the score, 'with you (points to Ryan)' which is confirmed by Stacey, 'Ryan then Zoe' (line 602). This shows how Zoe makes her reasoning visible . Ryan's next turn (line 604) shows that he is continuing the co-construction of knowledge (Cc) as he confirms what Zoe has pointed out. He also elaborates, explaining his reasoning (Ch) by using 'but', 'I'll do what I've just made up at the beginning *but* when I've done my first one two three one two three you'se two come in and I'll carry on playing'.

Callumn's turn shows his contribution to the group's joint understanding (Ee) because he repeats the count and begins to make a further suggestion (shown in italics), 'you do three and you do the last bit *just with more*' (line 606). The group's engagement with the task is evident as they respond to Zoe's request to try out the music despite being told that they have to stop, Zoe interrupts showing her concern that they should practice by repeating 'try', 'right, let's try it if you just try' (line 607). She is interrupted by the researcher who reminds them of the need to hurry. Ryan takes this up and affirms (Cf) the need to be quick, 'yeah just quick' (line 609).

From line 609 to line 617, Ryan and Zoe engage in a number of turns demonstrating cumulative talk where they express the urgency of each group member knowing their respective parts. The episode closes when the pupils are told to return to class.

5.4.1.1 Links with Flow Experience

7L	Challenge Max 9	Skill Max 9	Flow 15 or more	No Flow 8 or less	Potential for flow 9-14
Charlotte	5	8			13
Stacey	7	8	15		
Ryan	3	7			10
Callumn	3	5		8	
Zoe	8	8	16		

Table 5.4 7L Summary of Challenge and Skill scores for ESF3

Zoe and Stacey's scores on their ESFs indicate that they experienced flow during the session. The focus of this episode is on Zoe's contribution to the talk. However, Stacey displayed active listening and participation by playing. Elsewhere she demonstrated that she had clear goals about the dynamics for their music and she directed other members of the group to show her understanding of how the music should sound. Examples of Stacey's utterances from the transcript of the whole session are given below to show how these features are shown in her talk with comments in italics to explain the function.

75 St: right listen first of all it's quiet. *(ie clear about what is required)*

77 St: RYAN shut up right first of all it's quiet so which is the quietest out of all of us.*(clear about the dynamic)*

79 St: no it's gotta be quiet. *(dynamics again)*

81 St: like this like this. (Stacy plays Indian cymbal) *(Demonstrates the sound)*

138 St: watch (Stacy plays xylophone) *(Demonstrates again)*

151 St: right so C Calumn she started down there right so your doing it at the same time as Zoe. (Zoe plays) *(directs Calumn and Zoe)*

158 St: then it gets louder it goes to Ryan *(Dynamics again)*

180 St: get louder *(dynamics)*

183 St: getting quieter getting quieter Ryan *(dynamics)*

189 St: is this quiet is this quiet look *(dynamics)*

191 St: (laughter) a one two three four *(counting the group in)*

390 St: wait which one's better *(thinking about timbre)*

(Stacy plays cymbal with two different beaters)

545 St: start again *(directing the group)*

590 St: you need to do it for longer do it then *(directing a member of the group)*

Zoe's high score for flow is reflected in the way she influences the others towards successful completion of the music. Specifically, she has clear goals about the need to practice and motivates the others to do so. There is evidence to suggest she is challenged because she introduces additional ideas and that she has the skills because of her references to the graphic score and how it should be interpreted.

Zoe's involvement influences Ryan's participation. Although his ESF score for challenge and skill is lower than Zoe's, her input appears to motivate him to contribute to the cumulative nature of the group talk as he actively participates by demonstrating and recapping to the others. Ryan's statement, 'This is hard, isn't it' suggests that he is finding the music difficult but seems to rise to the challenge in

this extract by being active in planning and performing. Similarly, Callumn's low score indicates that he did not experience flow but by the end of the episode he responds to Zoe's request for more rehearsal and contributes to the group's joint understanding of what they will play.

Because of Zoe's involvement, the goal of performance is important and she appears to provide focus for the group to be clear about what they will play. There are many examples of this throughout her talk during the session.

Examples of Zoe's talk and playing that demonstrate the introduction of new ideas:

Examples of Zoe's talk that focus the other members of the group further on in the session		
170	Zo:	right we're going Ryan just do you little little thingy like that (demonstrates on drum) dead quiet Callumn we'll come in
177	Zo:	right now we're coming to section two (all play)
188	Zo:	right we need to write it down now watch.
200	Zo:	right we need to listen
		(Stacey bangs larger cymbal with beater)
		(plays cymbal)

The next episode shows a different aspect of the dialogue in the Year 7 episodes. As with Episode 1, two members of this group reported flow but reflects features of more disputational rather than exploratory talk.

5.4.2 Episode 2 Disputational Talk

Transcription Key for Episode 2

R:	Researcher	[text] [?]	best guess
T:	Teacher	xxx	inaudible
Lu:	Lucy (shaker/cow bell)	(text)	transcriber's commentary
Na:	Nathan (glockenspiel/claves)	CAPS	louder than surrounding speech
Li:	Lisa (xylophone)	...	slight pause in turn
Am:	Amy (guiro)	‖	overlapping talk
Ka:	Kate (guitar)		

Transcript 2 7E

Researcher Exits

736 Na: no because I know what I'm doing for the middle section (starts playing xylophone)

737 Am: Lisa will you help me write it down?

738 Li: ‖Katie just write - yours is just a load of squiggles

739 Ka: ‖yeah I know what I'm doing anyway shall I change because you know shush a
740 minute (xylophone stops) because you know the Elvis song it's got the same note as the end of the song

741 Li: ‖shall I write it all out because it will take me ages?

742 Na: ‖ No change it to the last xxx and then do it on the last note xxx

743 Lu: Katie you just do that one we made up yeah?

744 (Teacher enters)

Prior to the beginning of this episode, the researcher had just left after checking their progress and pupils are involved in writing up a graphic score before returning to the classroom to perform their music. The extract begins with Nathan, who says he knows what he is doing by stating, 'no because I know what I'm doing for the middle section' (Line 736). The use of 'I' is a characteristic of disputational talk here, exemplified in table 3 as individualised decision making (DcMus). Starting the

statement with a 'no' emphasises the disagreement element of this turn further. Nathan's turn is not taken up by any member of the group, but is followed by Amy who unsuccessfully initiates (Da) a request for help from Lisa. Instead of replying to Amy, Lisa makes a command statement, directing Katie what to write (Dd), 'Katie just write - yours is just a load of squiggles' (line 738).

The disputational nature of the talk develops throughout the episode as other members of the group perform turns demonstrating individualised decision making not taken up by others. In addition, they also use specific vocabulary and phrases to indicate conflicting approaches to the group composition (e.g. "shush a minute", "I know what I'm doing", "no"). In line 739, Katie appears to accept direction, replying with 'yeah' to begin with but then follows this with an 'I' statement (DcMus), 'I know what I'm doing anyway'. This echoes Nathan's opening turn, i.e. I know what I'm doing.

Developing this individualised approach, in the next part of this turn, Katie provides an idea about the music, 'Shall I change because you know shush a minute because you know the Elvis song it's got the same note at the end of the song' (lines 739-740). The phrase 'shush a minute' demonstrates an attempt to gain attention from the others and an acknowledgement of the overlapping talk with Lisa, as indicated in the transcript (line 742). This is an example of an unsuccessful initiation (Da) because her proposed idea is not taken up by the others. Similarly, Lisa's overlapping turn (line 741), an assertion (Dd) that writing out the score will take ages, is also an 'I' statement not developed by other members.

The close of the episode which is also the culmination of the composing session, demonstrates a change to a less disputational tone. Lucy addresses Katie's previous turn where she suggested a change and proposes instead that the group use notes that were agreed upon earlier on in the group work, 'Katie you just do the one we made up yeah (line 743)'. Although this is a command, the use of a collective pronoun, 'we', and 'yeah', both serve to mitigate the command, because 'yeah' invites agreement. Following this, the teacher summons them all back to the classroom (line 744) which serves to close the exchange so Lucy's final turn ends the discourse on a more conciliatory note.

5.4.2.1 Links With Flow Experience

7E	Challenge Max 9	Skill Max 9	Flow 15 or more	No Flow 8 or less	Potential for flow 9-14
Lucy	7	8	15		
Amy	6	9	15		
Katie	6	7			13
Nathan	5	7			12
Lisa	6	7			13

Table 5.5 7E Summary of Challenge and Skill scores for ESF3

This episode demonstrated how each participant is concerned with their own contribution to the composition and how they were making independent decisions. Although these are features of disputational talk, Lucy's and Amy's turns demonstrate how they were trying to bring the group back together.

Table 5.5 shows the responses for challenge and skill on the self reports for each participant. The self reports from Amy and Lucy indicated that they both experienced flow, scoring 15 for the combined totals for challenge and skill.

In this episode, Amy showed focus because she requested help to write their graphic score. The effect of this is reflected in Lisa's offer to help even though she saw this as a time consuming task. Lucy shows confidence by telling Katie, who is the only member of the group to have instrumental music lessons, to perform the music decided by the group earlier and not the tune Katie already knows. As with Amy's contribution, this has an effect on the outcome because Lucy is clear that the music should reflect what they had all been working on.

Amy and Lucy demonstrated that they were focused, had clear goals and the skills throughout the session at other points during the group work. Examples of Amy's utterances indicated she was consistent in her concern with the outcome, that she showed her skills by demonstrating musical ideas to the others, made positive responses and had clear ideas about the musical content:

30	Am:	we need to write it down *(concerned with the outcome)*
124	Am:	you play the wood first through the whole first section and then you switch to *(clear ideas and understanding ie skills)*
180	Am:	or that's cute *(positive response)*
322	Am:	no it isn't ... you just go like that (shows hand movement) *(clear ideas and skills)*
326	Am:	just go like that (strums guitar) *(clear ideas and skills)*

Lucy's input across the whole session was more concerned with the musical outcome of their collaboration and she shows her focus and involvement through questioning and directing other members of the group eg.

58	Lu:	I'm not either I'm only playing this (indicates wooden sticks) and something else
74	Lu:	no Lisa is isn't she
191	Lu:	do we repeat the do do do do before we go ...
240	Lu:	so are you repeating that first
433	Lu:	shall I play these once
454	Lu:	you should go (plays xylophone)
605	Lu:	what are you doing on this bit Lisa
626	Lu:	so what are you doing
633	Lu:	Lisa what are you doing
650	Lu:	what are you doing
743	Lu:	Katie you just do that one we made up yeah

Episodes 1 and 2 show how the nature the nature of dialogue reflected features of exploratory and disputational talk. The final episode from the Year 7 groups reflects features of cumulative talk.

5.4.3 Episode 3 Cumulative Talk

Transcription Key for 7T

R:	Researcher	[text] [?]	best guess
T:	Teacher	xxx	inaudible
Me:	Megan(Flute))	(text)	transcriber's commentary
Ol:	Oliver	CAPS	louder than surrounding speech
Lu:	Lucy (writing score)	...	slight pause in turn
Ja:	James	‖	overlapping talk
Aa:	Aaron		

Transcript 3 7T

545 Me: shall we have another go
546 Ol: yeah
547 Me: remember Aaron don't start start once I've finished that one okay not before
548 Lu: I've just written it out
549 Me: James you start on cue ...James watch me and I'll nod at you when you need to start
550 Ol: ready I'll go
551 Lu: wait
552 Me: wait
553 Ol: three two one
554 (pupils play first section)
555 Me: shush she's stopped everyone
556 Ol: who just did that
557 Aa: who do you think xxx
558 Me: she's stopped everyone
559 Ol: right let's stop then
560 Aa: no we want to play ... we want to play
561 Me: tell you what actually shall we just carry on
562 Ol: yeah
563 Me: start again
564 Me: yeah she will won't she
566 Lu: can you just calm down well I've got to do this
567 Me: can we well do it without Lucy then ... I'll do it lower actually coz' I can't be bothered
568 to do it high it sounds better when it's lower
569 Ja: can't you do it taller
570 Me: no no no it sounds better when its lower as well
571 (Aaron plays glockenspiel)
572 Aa: who did that
573 All: laughter
574 Aa: xxx
575 Me: James don't do that you'll break it right are you ready three two one go
576 (all play and Lucy writes on sheet)

This episode occurred as the group were nearing the end of the session. They had just performed the third section of the music to the researcher and had a few minutes before joining the rest of the class to perform the whole piece.

The episode demonstrates cumulative sequences of talk, initiated by Megan who first seeks confirmation (Ce) from the others to play through the music again, 'Shall we have another go?' (line 545). The use of the collective pronoun 'we' indicates

that everyone is included. In her next turn, Megan continues to seek confirmation (Ce) addressing Aaron more specifically about when to play 'Remember Aaron don't start once I've finished that one okay not before' (547). This demonstrates cumulative talk as Megan's turn functions to remind Aaron about what the group had already decided to play. It is an example of how they have accumulated knowledge together so far in the group work ('the accumulation of a common knowledge').

In the next turn Lucy's challenge, although an example of potentially disputational talk is not taken up by the others. Instead, Megan continues to work towards accumulating common knowledge constructed by the group so far. For example, she ensures that James knows when to play (Ch), 'James watch me and I'll nod at you when you need to start' (line 549). However in the next turn, the musical activity is interrupted again by Lucy who asks that the group 'Wait' (line 551). Although this request is echoed by Megan in line 552, which shows how she has acknowledged Lucy's request, it is ignored by the others who respond to Oliver, who re-initiates the music by counting the group in to which they all respond (Cf).

In line 566, Lucy initiates another potentially disputational statement (DcMUS), 'Can you just calm down well, I've got to do this'. By suggesting the group play without Lucy, Megan shows her concern for rehearsing and therefore a preference to focus on the accumulated knowledge constructed so far (Cc). The other group members respond to Megan's counting in, 'are you ready three two one go' (line 575), and play (Cf), whilst Lucy remains involved with writing the score.

5.4.3.1 Links With Flow Experience

7T	Challenge Max 9	Skill Max 9	Flow 15 or more	No Flow 8 or less	Potential for flow 9-14
Lucy	4	2		6	
James	5	5			10
Megan	8	8	16		
Oliver	6	7			13
Aaron	3	8			11
Table 5.6 7T Summary of Challenge and Skill scores for ESF3					

Megan is the only member of the group who reported experiencing flow during the session. Her high score for flow is reflected in the ways in which her utterances show her involvement and focus on the music as she directs other members of the group, particularly Aaron and James. Like Zoe in episode 1, she appears to have clear goals about how the music should be played as well as the additional skill of being able to play the flute. Her influence guides the talk in cumulative sequences that result in the construction of common knowledge for the group. By the end of the episode, the participants actively participate in playing together apart from Lucy, who had the lowest score for flow. However, it would seem that Lucy was willing to contribute because she worked on the graphic score throughout.

There are other examples of Megan's utterances throughout the session to support those discussed in this episode. Below are some of her utterances from the beginning of the session where Megan demonstrates her involvement. In lines 55 and 58 she develops ideas and encourages others to participate. In lines 72 and 77 she confirms and develops existing ideas once more.

55	Me:	then I start with a penny whistle so that's like (draws on sheet)
58	Me:	Lucy at the start we're doing two big drum beats that's the big circles
72	Me:	I'll repeat it just to the end of that section
77	Me:	so when I've done like one we'll do like James comes in on the xylophone so just make a little tune
		(James plays xylophone)

Around the half way stage, she provides a summary of part of the music by listing (lines 215-217) what been agreed and demonstrates to others some of the music (line 233). In line 248, she shows uncritical acceptance of others' suggestions.

215	Me:	start off again like the first bit so I do one of my little things and then someone else joins in on the second someone else joins in on the third and someone else joins in on the fourth so that's the thin to the thick so
219	Me:	shall we have a shaker instead of wind chimes
233	Me:	I'll show you
248	Me:	oh right okay it doesn't matter if it's not the same ... doesn't it
(some pupils writing, some playing)		

In the next section, the Year 8 episodes are analysed and a summary of the findings from both year groups is provided at the end of the chapter.

5.5 Year 8 Episodes

This section contains four episodes of Year 8 interaction selected for analysis in the lessons where the main activity was group composing. Each episode exemplifies the emphasis on different types of talk and is accompanied by triangulation with findings from the quantitative analysis. Individual participant scores for flow are presented for the participants in the discussions at the end of each episode.

5.5.1 Episode 4 Exploratory Talk

Transcription Key for 8c1

R:	Researcher	[text] [?]	Best Guess
T:	Teacher	xxx	inaudible
Th:	Thomas	(text)	transcriber's commentary
Jo:	Joshua	CAPS	louder than surrounding speech
Na:	Natasha	...	slight pause in turn
El:	Eleanor	?	indicates a question
Lu:	Lucy	+...	incomplete turn
Le:	Lewis	‖	overlapping talk

Episode 4 follows on the next page:

Transcript 4 8c1

760 Le: put that on the table and play it ... it usually makes them louder stick it on the table and do it listen
761 (Eleanor goes over to table and plays the thumb piano)
762 Th: aww
763 Le: told you
764 Th: it doesn't sound as nice and clear though does it
765 Na: no
766 Le: I told you it would work though
767 El: that sounds more spiritual
768 Th: it does
769 Le: it just needs to be a bit louder a bit
770 El: and then why don't we after we all done that we all just stop and just go
771 (plays thumb piano)
772 El: and then just go into the celebration
773 Na: it sounds like that thing off Grease
774 Th: (sings) oooo (plays shaker)
775 El: then we can go xxx
776 (laughter)
777 Th: yeah Josh can rap something for us
778 El: right can we do the last one because Lucy has to go
779 Le: oh no Josh has got the big drum again
780 El: can we do it one more time because Lucy has to go
781 Le: just put it there
782 Th: right five right
783 (Eleanor sings)
784 El: yeah I'm doing it different because I keep going (sings) kama did ah
785Th: (sings) kama di dah
786 El: that's what I keep doing
787 Th: yeah that's right and then do (sings) kama di dahh
788 Le: let's try this a minute
789 El: (sings) kama di dah
790 Th: kama did dah
791 El: kama did ah
792 Na: that's better (to Lewis) two of them
793 Th: right
794 El: why don't we go (sings) kama di dah again and then (sings) kama di dah and then the bang
795 (Lewis plays bongos and Thomas pretends to play drum)
796 Na: and then go into celebration
797 El: right and then I go (sings)doo kama di dah kama di dah and then everyone goes (sings)kama di dah right
798 everyone at the end go (sings) kama di dah then I go (plays thumb piano)
799 Le: how do we know when the end is?
800 El: because I've just gone (sings) ooo kama di dah kama di dah kama di dah
801 Th: (sings) yeahhhhhh
802 Le: right
803 Th: right okay
804 El: one two three go
805 (Thomas plays shaker)
806 Th: right okay I thought I was going to beat you in
807 (all play piece)
808 El: that sounded really good by the way
809 (Researcher enters)
810 R: that's fine that's lovely thank you very much that's great so you're done that's all I need

The episode starts with a sequence of turns that exemplify exploratory talk through the initiation and acceptance of statements and suggestions for joint consideration that are offered by members of the group. According to Mercer (2004), features of exploratory talk are characterized by participants 'making explicit reference to their task as requiring joint decision making and they attempt to organize the interaction so that everyone's ideas are heard' (Mercer, 2004, pg 149).

Exploratory talk differs from the kinds of cumulative talk already exemplified in Episode 3 of the Year 7 groups because participants are exploring, creating and developing new ideas rather than focusing only on rehearsal or on discussing previously accumulated knowledge. Therefore, in the initiation and acceptance of statements, participants can "engage critically but constructively with each other's ideas (2004: 146).

In this episode, the exploratory talk is initiated by Lewis who suggests using the thumb piano (Ee), 'put that on the table and play it ... it usually makes them louder stick it on the table and do it listen' (line 760). In the turns following Lewis' suggestions, Eleanor, Thomas and Lewis continue the exploration of the effect and sound of the thumb piano (lines 761-769). From line 770, Eleanor initiates a further idea for joint consideration which is subsequently developed by other members of the group, (Ee), 'and then why don't we after all we all done that we all just stop and just go (she demonstrates by playing the thumb piano) and then just go into the celebration'.

First, Natasha develops Eleanor's suggestion with the statement 'it sounds like that thing off Grease', which displays her active participation (Eh). Both Thomas and Eleanor display their participation by singing and playing a musical idea related to Natasha's point (Eh). This makes the others laugh and Thomas extends the joke to suggest that Josh could rap, 'yeah Josh can rap something for us' (line 777), further developing the theme. This sequence of turns also demonstrates how humour is part of the process of thinking together and suggests a more relaxed atmosphere within the group.

In line 783, Eleanor initiates further ideas (Ee) for collaboration on the vocal part of the music. She demonstrates her new idea for the vocal line, 'yeah I'm doing it different because I keep going (sings) kama did dah'. Thomas responds to this by singing along (Ej) with Eleanor together whilst Lewis (line 788) and Natasha (792) demonstrate their active participation also (Eh). From line 794, Eleanor continues to lead the collaborative work on the vocal part by proposing an accompaniment (Ee). Both Lewis and Thomas display agreement by playing along or pretending to play (line 795).

To close the sequence, Eleanor summarises and demonstrates so that knowledge and reasoning is clear, 'right and then I go (sings) doo kama di dah kama di dah and then everyone goes (sings) kama di dah right everyone at the end go (sings) kama di dah then I go (plays thumb piano)' (lines 797-798). This demonstrates a move into cumulative talk as the participants are at a rehearsal stage.

5.5.1.1 Links With Flow Experience

8c1	Challenge Max 9	Skill Max 9	Flow 15 or more	No Flow 8 or less	Potential for flow 9-14
Natasha	7	7			14
Joshua	4	6			10
Eleanor	5	7			12
Lucy	5	7			12
Lewis	4	7			11
Thomas	3	7			10

Table 5.7 8c1 Summary of Challenge and Skill scores for ESF3

In their self reports, Lewis, Thomas, Eleanor and Natasha reported that they felt able to express their opinions, that others were listening and that they cared what others were saying. This was reflected in the exploratory nature of their talk in the reported excerpt presented here in that they were actively involved in the composing process as they listened to each other, made jokes and stayed focused on the music. However, none of this group reported flow experience although Natasha came very close. The reason for this could be that they were enjoying the activity but were not challenged enough for flow to occur. Evidence for this is provided by the self reports of Eleanor, Lewis and Thomas who indicated higher levels of skill than challenge. One exception to this is Natasha, who was the only member of the group to report equal levels of challenge and skill.

Natasha engaged in exploratory talk at other points during the interaction by making suggestions and giving her opinions on what could be played:

22/23	Na: I think we should just do loads of spider diagrams and do all the different stuff and then
151	Na: you could have call and response in that
229	Na: there'd be a beat in it
460	Na: how are you doing the whistle then as well? don't want that one
480	Na: oi come on we're doing it we're doing it
529	Na: I come in after you

This episode showed how features of exploratory talk were used by the participants and how one participant, Natasha, who reported equal levels of challenge and skill contributed to the group dialogue. The next episode shows how another participant also reporting equal levels of challenge and skills contributed to the cumulative nature of the dialogue.

5.5.2 Episode 5 Cumulative Talk

Transcription Key for 8b2

R:	Researcher	[text] [?]	Best Guess
T:	Teacher	xxx	inaudible
El:	Ella	(text)	transcriber's commentary
Eli:	Elizabeth (Beth)	CAPS	louder than surrounding speech
Em1:	Emma 1	...	slight pause in turn
Vi:	Victoria	?	indicates a question
Em2:	Emma 2	+...	incomplete turn
Interchanging instruments played		CAPS	louder than surrounding speech

Transcript 5 8b2

321 T: not a finished performance I don't want you to worry if it's not finished okay
322 Eli: right
323 Em2: can I just does this sound right
324 (Ella listens)
325 Eli:you just go (plays DOUBLE CANE SHAKER) 1 2 3 and 4
326 Em1: yeah (takes shaker)
327 El:do your own beat
328 (Elizabeth plays drum)
329 El:are you ready to do the beginning
330 (some of the girls play)
331 El:stop it stop it stop it stop it stop it stop it ... we need to start Emma
332 Eli:right so what beat am I doing 1 2 3 4 5 1 2 3 4 5
333 Vi:am I doing a 1 2 3 4 5
334 (all play)
335 El:stop
336 Eli:right okay right okay stop
337 El:we need to start from the beginning because we're going in a minute
338 Eli:right
339 Em1: 1 2 3 1
340 (Elizabeth plays drum)
341 Eli:(sings) ha li hela wa
342 El:stop don't play yet (to Emma 1)
343 Eli:you've got to say it ready
344 El:1 2 3 4 (sings) ha li hela wa
345 Eli:no hang on I'm doing that
346 El:oh right oh right
347 Eli:right (plays drum)
348 El:(sings) ha li hela waly
349 Many: (sings) ha li hela waly
350 El:(sings) ha li hela waly
351 Many: (sings) ha li hela waly
352 (girls start playing instruments)
353 El:(sings) ha li hela waly
354 Many:(sings) ha li hela waly
355 (voice off camera instructing girls to come back into the main whole class)
356 Many: no
357 El:right we're not doing any beats when we're singing the[song bit][?]and then we're
358 joining in at the end aren't we?
359 Em2: I've got to do this beat
360 Vi:why don't we do right you do the ha li hela wa
361 El:us two
362 Vi:and then us first and then I join in on the second one and then she joins in and
363 El:oh right okay
364 Em2: am I playing this ... right am I playing from your response
365 Eli:no
366 ??:just do what we can

The episode shows the participants in rehearsal just before going back to play to the rest of the class. It shows how cumulative talk found at the end phases of the group work is characterised by 'interaction' that 'is cooperative' and where there is no need for 'critical consideration of ideas' (Mercer, 2004, pg 149).

The episode begins with a sequence of confirmatory questions and statements (lines 323-327) as Emma 2 seeks confirmation (Ce) about her part, 'Can I does this sound right?' (line 323). Ella indicates that she is listening (line 324) . Elizabeth, Emma 1 and Ella answer by confirming what will be played (Cb); 'You just go (plays shaker) 1 2 3 and 4' (line 325), 'Yeah' (line 326) and 'Do your own beat' (line 327), all of which are accepted but not critically evaluated. Following this, Ella initiates a play through, 'Are you ready to do the beginning?' (line 329).

Following some playing of the music, the cumulative talk continues (lines 331–334) as the participants seek confirmation from each other (Ce) about what to play, using a series of questions; 'What beat am I doing?' (line 332) and, 'Am I doing a 12345?' (line 333). Ella also suggests rehearsing, 'We need to start from the beginning because we're going in a minute' (line 337) which is accepted (Cb) by Elizabeth and Emma 1, 'Right' (line 338) and, '1 2 3 1' (line 339), who demonstrate agreement.

Lines 341-354 show how the rehearsal involves cooperation from each of the group members as they play and sing 'ha li hela waly etc'. In offering the group a summary of what they will do, Ella is confirming (Ch) and seeking confirmation (Ce) regarding their joint ideas for the music, 'Right we're not doing any beats when

we're singing [the song bit] [?] and then we're joining in at the end aren't we' (lines 357-358). Victoria continues to summarise (Cc), 'and then us first and then I join in on the second one and then she joins in'. The episode concludes with further discussion to confirm (Ce) what they will play (lines 359-367).

5.5.2.1 Links with Flow Experience

8b2	Challenge Max 9	Skill Max 9	Flow 15 or more	No Flow 8 or less	Potential for flow 9-14
Ella	7	7			14
Emma 1	4	4		8	
Emma 2	6	7			13
Victoria	8	5			13
Elizabeth	3	blank		3	

Table 5.8 8b2 Summary of Challenge and Skill scores for ESF3

Table 5.8 shows that Ella's self report indicated the highest and equal scores for challenge and skill for this group. Although she did not report flow experience during the session, this episode suggests that she had an influence on the group in that she was focused and involved in the music. She also took the lead in summarizing and guiding the others about what to sing or play (eg lines 357-358).

In their self reports for this lesson, all the participants indicated they felt able to express their opinions, that others were listening to them and that they cared what others were saying. Their engagement is demonstrated in the episode because they participated cooperatively to reach agreement about what to play. Emma 1 and Elizabeth had the lowest scores for challenge although they were observed to be actively involved in the rehearsal process by playing their parts. All the participants reported enjoying the session.

The main differences between Emma 1 and Elizabeth and the other members of this group were in their responses on the self reports about the importance of the activities and whether or not they had wished to be doing something else during the lesson. Emma 1 and Elizabeth indicated that the activities were not that important to them and Emma 1 indicated that she wished she had been doing something else. This is reflected in the talk as Emma 1 and Elizabeth are not as involved in the discussion as the other three members of the group, Emma 1 only speaks twice (lines 326 and 339), the first time was to confirm Emma 2's question about her part and the second time to count in a play through of the music. However, observations of these participants in the video of the episode showed that they were involved in playing and singing. Elizabeth's lack of involvement in the talk mainly consisted of short statements, questions or single word confirmations that made very little contribution to the content of the music: eg 'right so what beat am I doing' (line 332), 'right' (line 332, 336, 338 and 347), 'you've got to say it' (line 343), no hang on I'm doing that' (line 345).

Ella's talk throughout the session more commitment to the activity as the following examples from the beginning of the session indicate:

24	El:	we could start with like the call and response thing
36	El:	no while we're while we're doing it get the get the vocals quieter and the instruments that we're using louder
40	El:	do you know what I mean (sings) la la la la la
47	El:	no it doesn't matter it's too quiet

Later on she focuses on aspects of the performance to draw the attention of the rest of the group to the structure and content of the music:

174	El:	well we have to just do it as 1 2 3 4 5 6 7 we have to have a tune like that
182:	El:	everyone has to play an instrument
194	El:	and then you need to your singing you need to do your +...
204	El:	what call are you doing what call and response are you doing?

In addition, Ella's quotes frequently address the group (eg 'we', lines 24, 26, 174 and 'everyone', line 182) and are evenly distributed to show a general concern for involving the others. There is very little about herself as she often uses 'we' and 'you' to include the others.

In the next episode, only one of the participants reported flow and the nature of the talk is both cumulative and disputational.

5.5.3 Episode 6 Cumulative/Disputational Talk

Transcription Key for 8c3

R:	Researcher	[text] [?]	Best Guess
T:	Teacher	xxx	inaudible
Is:	Isabelle (Glockenspiel & Cabasa)	(text)	transcriber's commentary
Eli:	Elizabeth (Bongos)	CAPS	louder than surrounding speech
Sa:	Sarah (Xylophone & BEADS)	...	slight pause in turn
Va:	Vanessa (Congo)	?	indicates a question
		+...	incomplete turn

Transcript 6 8c3

335 T: girls what theme are you doing?
336 Eli: we don't know
337 Sa: celebration
338 Is: celebration
339 Sa: yeah celebration (teacher exits)
340 Va: right
341 Is: (sings) dayyoo my knees hurt
342 Sa: I know mine just did then
343 Eli: xxx
344 Va: yeah go day dayyyooo daylight come and we+...
345 Is: go eh eh eh eh eh
346 Eli: dayyyoo
347 Va: eh eh eh eh
348 Eli: we could have done it like that
349 Va: eh eh eh eh eh ehhhhh
350 Eli: what other like Jamaican songs are there? ... oh what was the song we were singing in the
351 library this morning aga do do do
352 Va: that's not Jamaican that's Spanish right are you ready
353 Is: erm shall I do
354 Va: right start from the beginning start from the beginning without any talking
355 Is: they all sound really good in there
356 Eli: ours is well good ours is like a more quiet one I actually reckon ours is more magical because
357 theirs is more celebration and ours is more ours is dead like ooooo
358 Va: right are you ready right are you ready right start from the beginning no talking apart from
359 singing
360 Eli: ours is like xxx
361 Va: okay go

In this episode, there are sequences of both cumulative and disputational talk.

According to Mercer's definition of cumulative talk, participants build 'positively and

uncritically on what others have said' (Mercer, 2004, pg149) and this episode exemplifies cumulative talk beginning with Isabelle's and Vanessa's uncritical acceptance (Cb) of Sarah's response to the teacher's question regarding the topic (line 335). Sarah answered without consulting the others (lines 336-340) and they continue to be uncritical and accepting of each other's ideas as Isabelle initiates the vocal part, dayyoo' (line 341) which is picked up and extended by Vanessa, 'yeah go day dayyyooo daylight come and we+...'. (line 344). Isabelle continues to lead the vocal line, 'go eh eh eh eh eh' (line 345), echoed by Elizabeth, 'dayyyoo' (line 346) and Vanessa, 'eh eh eh eh' (line 347). The sequence of utterances from line 344 to line 349 provides an example of the way in which cumulative talk occurs through singing as participants communicate their uncritical acceptance of Isabelle's singing (Cg).

From line 350, the verbal dialogue between the participants focuses on their performance. There are features of disputational talk from this point to the end of the episode which are similar to those identified in examples provided by Mercer (2004) in that 'participants take an active part, but there is little evidence of joint, cooperative engagement the task. Much of the talk consists of commands and assertions...the interaction has an unproductive, disputational quality' (Mercer, 2004, pg 149).

The disputational sequence is started by Vanessa who makes an assertion, discounting Elizabeth's idea (Dd), 'that's not Jamaican that's Spanish right' followed by a command 'are you ready' (lines 350-352). Isabel unsuccessfully

initiates (Da) a question about the music, 'erm shall I do' (line 353) because this is ignored by Vanessa who makes a further command (Da) to start playing, 'right start from the beginning start from the beginning without any talking' (line 354).

Isabelle ignores Vanessa's request to play and draws attention to the music of the other groups, 'they all sound really good in there' (line 355). Elizabeth confirms and elaborates, 'ours is well good ours is like a more quiet one I actually reckon ours is more magical because theirs is more celebration and ours is more ours is dead like ooooohер' (line 356-357). Although these comments are related to their music, there is no joint discussion to elaborate on the Elizabeth's appraisal of their piece which illustrates the unproductive nature of the talk as Vanessa continues, unsuccessfully, to push for a play through with another command (Da), 'right start from the beginning no talking apart from singing' (line 358-359). Instead, Elizabeth tries to finish her statement begun in line 357, 'ours is like xxx' (line 360) but is interrupted by Vanessa who is still trying to get everyone to play, 'okay, go' (line 361).

5.5.3.1 Links With Flow Experience

8b2	Challenge Max 9	Skill Max 9	Flow 15 or more	No Flow 8 or less	Potential for flow 9-14
Vanessa	7	6			13
Sarah	4	8			12
Elizabeth	5	7			12
Isabelle	8	8	16		
Table 5.9 8c3 Summary of Challenge and Skill scores for ESF4					

Table 5.9 shows that Isabelle was the only participant in this group who experienced flow because she reported high and equal levels of challenge and skill during the session. In the episode analysed here, her input is evident in the way she initiates the musical ideas that are picked up by the others (lines 341 and 345).

She also initiates comments about the music of the other groups (line 355). In other parts of the session she makes creative suggestions about the structure of the music, suggestions about how they could use the instruments and what to sing.

Episode 7 shows talk of an exploratory quality where none of the participants reported flow experience. However, the talk shows that the one of the participants does display sufficient musical skill for the activity even though his responses on the ESF did not reflect this.

5.5.4 Episode 7 Exploratory Talk

Transcription Key for 8b6

R:	Researcher	[text] [?]	Best Guess
T:	Teacher	xxx	inaudible
To:	Tom (drum)	(text)	transcriber's commentary
Lo:	Louis (cabasa & others)	CAPS	louder than surrounding speech
Jo:	Jordan (xylophone)	...	slight pause in turn
		?	indicates a question
		+...	incomplete turn

Transcript 7 8b6

273 Jo: [we're doing work] [?]
274 To: do proper work then
275 Jo: with Louis in our group none of them will work we might as well go with the
276 easiest one celebration
277 Lo: celebrate good time (sings) de de de
278 Jo: (sings) de de de der ... right put it in then use you're right wrist put it in don't
279 hold it (talking about the drum)
280 (All play)
281 Jo: right we're doing celebration
282 (Louis plays MINI DRUM)
283 Jo: right you can't do that because you've got to be like that (puts hands in the air)
284 To: (plays drum and sings) uma sika laly we can do uma sika laly
285 Lo: no 'mor saka lely' (laughter) 'mor saka lely'
286 (pupils stop playing and talking as another teacher passes through the corridor)
287 To: alright xxx
288 Jo: is that what you were waiting for
289 To: yeah (laughter)
290 Jo: right we need to think of another right so if it's celebration we kind of like
291 improvise we just have a bit of a boogie (plays Xylophone)
292 To: no I'll start
293 (Jordan continues to play)
294 To: I'll start by going I'll start and I'll finish and you can join in and Louis can go
295 (does 'happy face')
294 Lo: no
295 To: and then we'll go (sings) kuma sika laly kuma sika laly
296 Lo: xxx
297 Jo: yeah that's clearly [what we'll do] [?]
298 teacher enters
299 T: right gentlemen quick run through and then you need to come back in
300 To: right
301 Jo: right
302 T: okay

The episode comes just before the end of the session in week 3 and is a transcription of the interaction between the participants just before they are due to return to the classroom to perform the finished piece. After some initial off

task talk (lines 273-274), Jordan takes the lead to state which topic they will use, 'we might as well go with the easiest one celebration' (line 275-276). This initiates a response from Louis who starts to sing (line 277) followed by Jordan (line 278). The call and response sequence demonstrates exploratory interaction because the participants work together by actively participating (Eh) to suggest ideas which they all take up by either through singing or playing (line 280).

The exploratory talk continues as all three participants explore and develop the musical ideas. This is demonstrated by their active participation as Jordan confirms the topic (line 281), Louis plays the drum with help from Jordan (line 283) and Tom's initiation of a vocal part (line 284) which is taken up by Louis (line 285). Despite being momentarily distracted by a teacher (line 286-289), Jordan keeps them focused by offering a statement for joint consideration (Ee), 'right we need to think of another right so if it's celebration we kind of like improvise we just have a bit of a boogie (plays xylophone)' (lines 290-291). Using 'we' shows he is including all of them to maintain shared understanding of the task.

The exploratory talk continues as Tom offers an alternative suggestion (Ee) to Jordan's idea, "I'll start by going I'll start by and I'll finish and you can join in and Louis can go (pulls a happy face to the camera) (line 294-295). Tom continues to develop his ideas by demonstrating (Ee) the vocal line, 'and then we'll go (sings) kuma sika laly kuma siks laly' (line 295). The construction of his turn demonstrates how it is building on the previous suggestion, "and then ....".

Jordan's utterance, 'yeah that's clearly what we'll do' (line 297) suggests acceptance of Tom's suggestions and the episode ends.

5.5.4.1 Links With Flow Experience

8b6	Challenge Max 9	Skill Max 9	Flow 15 or more	No Flow 8 or less	Potential for flow 9-14
Tom	7	3			10
Jordan	3	3		6	
Louis	0	blank		0	
Table 5.10 8b6 Summary of Challenge and Skill scores for ESF4					

None of the participants in this group reported experiencing flow. However, examples of Tom's utterances throughout the session, given below, show that he contributed to the development of the music by making suggestions and encouraging the others to work despite their reluctance. His self report indicated a high level of challenge but he perceived himself to be lacking the skills. Lines 117, 121 and 135 indicate musical skills in that he had some clear ideas about how the instruments should be used and how they should sound. In his utterances throughout the episode, examples of which are given below, he appears to try and motivate others to work harder and contribute more, e.g. lines 184, 214, and 273.

117	To: no (tries to stop Jordan playing on Xylophone) it's gotta to be no we're doing warfare so it's gotta be low like (play deep vibrating beats on drum)
121	To: that's pretty good just like a chant isn't it like (plays drum)
135	To: Louis (Louis takes beater and plays drum) ... you're using these little things (indicates African percussion)
160	To: no I'll just do this
184	To: right right stop then because we have to like get on with it
188	To: aww can we actually do something today
214	To: no right Jordan I think we should actually do it now
240	To: Jordan you're doing the work sheet
256	To: like this (plays drum) and you can go (does a 'happy face')
273	To: do proper work then
293	To: I'll start by going I'll start and I'll finish and you can join in and Louis can go (does 'happy face')

The next section contains four episodes of Year 9 interaction selected for detailed discourse analysis in the final session of the small group composing activities. As for the Year 7 and Year 8 groups, the Year 9 episodes show the emphasis on different types of talk and are followed by triangulation with findings from the quantitative analysis of the self reports for flow. Individual participant scores for flow are presented for the participants in each group.

5.6 Year 9 Episodes

The nature of the musical activity was different for the year 9 participants and was less open –ended than year 7 and 8. The year 9 groups were engaged in composing a song in Britpop style and pupils were required to work within the structure of a popular song ie Intro/Verse/Chorus/Verse. During the composing process, it was observed that participants took on more clearly defined roles; those with more musical expertise tended to dominate and were tacitly regarded as the leaders/initiators of the musical content eg chords/melody lines. Interaction was found to be different when working with words and music.

5.6.1 Episode 8 Exploratory Talk

Transcription Key for 9c2

R:	Researcher	[text] [?]	Best Guess
T:	Teacher	xxx	inaudible
La:	Laura	(text)	transcriber's commentary
Lau:	Lauren	CAPS	louder than surrounding speech:
Lo:	Lorna	...	slight pause in turn
Al:	Alex	?	indicates a question
Me:	Melissa	+...	incomplete turn
Instruments: Keyboard and Voice		CAPS	louder than surrounding speech

Transcript 8 9c2

145 La: so we've got+...
146 (girls listen to Lorna)
147 La: that's quite relaxed
148 Lo: (stops singing) don't you think that's right good ... no what was that one you had on before
149 La: that will make it too much of a rap
150 Me: (starts to sing) ... right I need the toilet
151 La: right I think seven's the best so far ... I think we'll do that
152 Lo: I don't I think that seven's the worst ... it would make it rap though Alex
153 (Laura and Lauren talk inaudible)
154 La: I don't know even how it goes
155 Lo: yeah right okay try singing this (to Alex)
156 La: do you want me to slow it down a bit
157 Lau: have you been practicing
158 Lo: yeah just slow it yeah ... you mean this yeah
159 La: I hope you are impressed
160 Lau: I am impressed ... (inaudible)
161 Lo & Al: (both sing along)
162 La: one two three and
163 Lorna & Alex: (both sing along)
164 (all listen)
165 La: it's a bit der der der der
166 Lau: mono

The episode begins with Lorna singing the lyrics that had been agreed in the previous lesson (line 146). The interaction reflects exploratory talk as Laura and Lorna propose keyboard styles to find the most appropriate one for their lyrics (lines 147-156). The utterances show how they provide each other with ideas for joint consideration (Ee) and offer and acknowledge opinions about suitability for the lyrics, eg, it would make it a rap though Alex' (line 152), 'do you want me to slow it down a bit' (line 156).

Active participation (Eh) is evident as Melissa (line 150) and Lorna and Alex (line 161) sing the lyrics with Laura's keyboard accompaniment and Laura offers her opinion, reiterated by Lauren, about the sound being dull (lines 165/166).

This episode shows how the year 9 participants work differently to the year 7 and 8 groups because there is a clear distinction about who plays what. Laura has the role of keyboard player, which is approved by Lauren (line 157), and takes the lead in choosing the style and regulating the tempo (lines 145, 147, 149, 151, 156, 162,165). Lorna leads the singing (lines 146, 155, 161, 163) and Melissa (line 150) and Alex (lines 161 and 163) join in.

5.6.1.1 Links with Flow Experience

9c2	Challenge Max 9	Skill Max 9	Flow 15 or more	No Flow 8 or less	Potential for flow 9-14
Melissa	9	9	18		
Laura	3	7			10
Lauren	7	7			14
Alex	4	7			11
Lorna	8	2			10
Table 5.11 9c2 Summary of Challenge and Skill scores for ESF4					

Table 15 shows that Melissa reported maximum scores for challenge and skill on ESF to suggest that she had experienced flow. This was reflected in her musical interaction with other members of the group rather than through her talk of which there is very little throughout the session. Her influence is most evident when the teacher was present which is presented below:

48 Me: what have we got up to now
55 Me: I'll show you autochords
76 Me: we need to turn the tempo down
85 Me: that's a bit fast
88 Me: I mean we can always turn it down
91 Me: turn the tempo down
93 (Melissa turns the tempo down)
108 Me: go back use that UK something
251 T: (plays keyboard) der... she's doing it yeah can you sing it there the sun is shining in the sky
252 Me: the sun is shining in the sky
253 Me: (sings lyrics)
254 Teacher: okay she's singing it in she's using a C and a D major chord there
255 instead just a C and D instead okay start it again (add beat/style from keyboard)
256 one two three four the sun
257 (Melissa sings): the sun is shining in the sky
258-270 Teacher: just Melissa doesn't need to sing yeah you're all having a role in this so if Lauran's gonna be doing autochords and controlling the beat and you're going to be playing on the piano you need to decide what you to are going to do ... you can either add some dancing or Alex you can use your violin if you want but you could take over Laura's part and Laura could use her flute in the melody part or whatever

Another participant, Laura, indicated that she had not found the lesson very challenging and had good skills for the activity which is reflected in her expertise on the keyboard, supported by her statement about having practised. She also reported that she had not regarded the activities as particularly important, as did

Alex and Lorna. Lauren was the only participant in this group to indicate that she had wished to be doing something else. However, all the participants in this group indicated they had enjoyed the lesson, which is reflected in the talk by their active participation and apparent engagement with the activity. Melissa's utterances displayed above show how she focused the group discussion and contributed to the creative process. For example, lines 252-270 show how she led the singing of the lyrics which is also picked up by the teacher in lines 258-270.

This episode highlights an important difference between the interaction between Years 7 and 8 and Year 9. The following episode also reflects the differences between the quality of the dialogue and the quality of experience in Year 9.

5.6.2 Episode 9 Exploratory Talk

Transcription Key for 9b2

R:	Researcher	[text] [?]	Best Guess
T:	Teacher	xxx	inaudible
Le:	Leo	(text)	transcriber's commentary
Ha:	Hayley	CAPS	louder than surrounding speech:
An:	Andrew (Keyboard)	...	slight pause in turn
Ka:	Kat	?	indicates a question
Ja:	Jamie	+...	incomplete turn
		CAPS	louder than surrounding speech

Instruments: Keyboard and Voice

Transcript 9 9b2

277 (Andrew plays keyboard)
278 (all continue as before going through each verse with chorus)
279 Ha: and then Kat come and do an opera bit (sings lyrics in an operatic voice)
280 Le: I reckon we should take that out and then put in
281 An: we can go a bit minor there
282 (Leo sings)
283 Ha: right that's it then...shall we do it one more time...don't sneeze on me...everyone sing this time
284 An: what am I doing for that bit
285 (Leo and Hayley play about)
286 Ja: hit it on her fingers
287 Ha: Leo that really hurt
288 Le: right come on let's go one two three four
289 (Andrew plays keyboard)
290 (all sing lyrics or play instruments)

The episode comes from week four and the participants have finished writing the lyrics to verses and chorus. Here they are engaged in putting the words to music prior to performing the song to the rest of the class. Following an initial play through (line 278) the interaction exemplifies exploratory talk because the episode begins as they are actively participate offering statements for joint consideration (Ee). Hayley, Leo and Andrew offer ideas that require joint decisions to be made about how the song will be performed, eg 'and then Kat come and do an opera bit (sings in an operatic voice) (line 279) , 'I reckon we should take that out and then put in' (line 280) and, 'we can go a bit minor there' (line 281). There is evidence of some off task interaction (lines 285-287) but the group re-focus and all join in to play the song through once more (line 290).

5.6.2.1 Links with Flow Experience

9b2	Challenge Max 9	Skill Max 9	Flow 15 or more	No Flow 8 or less	Potential for flow 9-14
Andrew	4	4		8	
Jamie	7	7			14
Hayley	0	0		0	
Leo	5	5			10
Kat	8	blank		8	
Table 5.12 9b2 Summary of Challenge and Skill scores for ESF4					

Table 5.12 shows that none of the participants in this group reported flow experience during the lesson. Hayley and Andrew reported low levels of challenge and skills during the lesson. Kat did not respond to the question for skill. On their reports for the importance of the activities, Jamie, Leo, Hayley and Kat all indicated that they had not considered the activities during the lesson to be important to them. The evidence for this in the talk comes from Leo and Hayley who were playing around (line 285) and James joining in (line 286). Kat does not make any contribution to the discussion, although she joins in the singing (line 278). Her contributions were found to be very limited throughout the session.

In the last two episodes of this chapter, only one participant reported flow in each group. Episode 10 shows how participants engaged in the talk of an exploratory and disputational quality. It is the only example where these types of talk occur together. Episode 11 is an example where the nature of the talk was almost all exploratory.

5.6.3 Episode 10 Exploratory and Disputational Talk

Transcription Key for 9b6

		xxx	inaudible
St:	Steven	(text)	transcriber's commentary
Ad:	Adam	CAPS	louder than surrounding speech
Jo:	Joseph	...	slight pause in turn
Ry:	Ryan	?	indicates a question
An:	Anthony	+...	incomplete turn
		CAPS	louder than surrounding speech

Instruments: keyboard, voice and electric and bass guitar

Transcript 10 9b6

88 Ad: we've got the verse to do listen I woke up and it was raining the gutters they were dripping the
89 cats they were licking at my stinky feet my eyes opened to see a stray eating last night's tea my cardboard
90 box was soaking but it didn't bother me er my feet are cold and my fingers are numb people walk past
91 me as if I'm dumb I silently get out my old saxophone whilst everybody quietly goes idly to work the wind
92 blows as I play some people stay but they go they have no time for me all I get is a few turned heads
93 not much but a few quid is all I need enough for this night's tea
94 Ry: let's all sing it
95 An: give us that (Steven hands bass to Anthony who starts playing)
96 Ry: is it I wake up
97 St: hang on no let me get my guitar
98 Ad: none of that is the chorus
99 An: no that's the verse ... are we gonna sing that or just like say it
100 Ry: say it ... I think we should say it but what's going on with it
101 Jo: (sings off camera)
102 An: shut up a sec (plays bass and sings chorus, all listen)
103 Ad: yeah that's good keep that
104 St: that's good that
105 An: we could have drums ... does that sound good ... or with the guitars we just do der der der
106 Ry: keep the bass down a bit ... because the bass is like alright for now
107 An: you can do it with the guitars as well so just play a C chord do der der der so just like
108 (plays, sings again and calls out to show where the chord changes are)
109 Ry: what do you want though +...
110 (Anthony continues to play and sing)
111 Ry: Anthony what do you want to do now we'll keep the bass and all that but what are we doing are we
112 just forgetting the drums and the guitar and all that (Anthony hands bass over to Stephen)
113 An: no we're gonna do it
114 Ry: we could just forget it until next week
115 Ad: no
116 An: it's not hard we've got the chords and stuff right we'll sort out the thing the verse
117 (Steven plays the bass)
118 An: yeah that's it
119 Ad: right that's good keep that

The episode comes from week four as the participants are engaged in working on the music prior to performing it to the rest of the class. Adam reads the lyrics of the verse to the rest of the group (lines 88-93), and exploratory talk is initiated by Ryan as he suggests that they join in to try out singing the lyrics (Ee) and the exploratory interaction is continued by Anthony who starts trying out chords on the guitar and by Stephen who also wants to play (lines 94-97). The interaction shows their active participation (Eh) because they are keen to join in. However, there is a disputational element introduced by Adam who points out that what Anthony has just played was not related to the verse (line 98).

The rest of the episode is dominated by utterances from Anthony, who demonstrates (Ej) his ideas for the chorus for the others to consider (line102) and Ryan, who wants to keep the bass quieter (line 106). The others show their support by praising Anthony's demonstration (lines103-104) which appears to encourage him to offer more ideas about the music for joint consideration (Ee), 'we could have drums...does that sound good...or with the guitars we just do der...der der' (line 105) and, 'you can do it with guitars as well just play a C chord do der der der (line 107). However, the disputational aspect of the interaction is also evident, as Ryan asks Anthony twice about what they should do (line 109 and 111) to which Anthony gives negative responses without consulting the others (line 113, 115 and 116). The potential for disagreement seems to be diffused by Stephen's playing (line 117) which is praised by Anthony and Adam (lines 118 and 119).

5.6.3.1 Links With Flow Experience

9b6	Challenge Max 9	Skill Max 9	Flow 15 or more	No Flow 8 or less	Potential for flow 9-14
Anthony	4	blank		4	
Stephen	8	7	15		
Ryan	6	5			11
Adam	3	7			10
Joseph	blank	blank		0	
Table 5.13 9b6 Summary of Challenge and Skill scores for ESF4					

Stephen reported experiencing flow in this lesson but in this episode his input was through playing rather than talk. Further exploration of his utterances during other points in the lesson indicated that he contributed to the interaction in a similar way as the following utterances and researcher observations of the video data demonstrate:

22 St: and then there's er there's er the chorus goes in between each one
66 St: we've got the tune right there
105 St: that's good that
193 St: that's better
83 St: yeah play that
225 (Steven and Joseph play)
242 (Steven and Joseph play)

During discussions with the teacher in this session, Stephen plays bass guitar throughout with Adam (keyboard) and Joseph (rhythm guitar) to work out the chords. He is observed listening rather joining in the discussions. This is similar to the flow participant in 9c2, Melissa, who also contributed to the interaction through singing rather than through discussion with the others in her group.

Joseph's lack of talk in the episode suggests a lack of involvement during the lesson: in his responses on the self report he left the Challenge and Skill questions blank, although he had responded to these items on his self reports for weeks one, two and three. Anthony left his answer to the skills question

blank which is at odds with his input during the episode analysed here because he appeared to have had the skills required to sing and play his ideas to the others. Adam reported much lower challenge than skill. Ryan reported a slightly higher level of challenge than skill.

5.6.4 Episode 11 Exploratory Talk

Transcription Key for 9c3

	xxx	inaudible
Ja: Jade	(text)	transcriber's commentary
Lu: Lucy	CAPS	louder than surrounding speech:
Em: Emma	...	slight pause in turn
Instruments: Keyboard and Voice	?	indicates a question
	+...	incomplete turn

Transcript 11 9c3

98 Ja: right have we got anymore words anymore words to write down
99 Lu: right I thought about it (sings) I'm standing in a puddle and my feet are getting+...it's like
100 motown [?] ... feet are getting wet coz these bullies are being
101 Ja: wow well good
102 Lu: such a pest
103 All: (laughter)
104 Em: coz these bullies are being such a pest
105 Ja: right so what does it go that's good
106 Lu: (sings) I'm standing in a puddle
107 Em: (goes to sing)
108 Lu: shhh
109 Ja: is that a new one are we starting there
110 Lu: in the puddle ... yeah ... (sings) I am standing in a puddle
111 Ja: is it not I'm
112 Lu: (sings)I am standing I'm standing...no I am... (sings)I am stand+.. I'm ..oh yeah I'm...(sings)
113 standing in the puddle ... in a
114 Em: (sings) puddle
115 Lu: (sings)and my toes are getting wet...because these bullies are being mean and they make me cry...
116 no and they make me sad ... huhhhhhhhh
117 Ja: right so I'm standing in a puddle and my toes are getting wet
118 Lu: (sings) and my toes are getting wet ... these bullies
119 Em: no (sings) and these bullies are so mean ... they make me feel so sad
120 Lu: yeah
121 Ja: hoorah

The episode is taken from near the beginning of the session in week 4 and shows the participants finalizing their ideas for putting the lyrics to music for the verse.

The episode exemplifies exploratory talk because the group members interact constructively and critically as Lucy proposes her ideas (Eh) for the others to consider (line 99-100). Although Jade praises Lucy's ideas (lines 101and 105) and Emma echoes her last line (line 104), Jade suggests a change (Ef) which Lucy tries out before retaining her own version for fitting in 'I am' (lines 111-113). As Lucy continues the lyrics, Emma shows her active participation (Eh) by joining in (Line 114) and offers change (Ee) which is accepted by Lucy and Jade (lines 119-121).

5.6.4.1 Links With Flow Experience

9c3	Challenge Max 9	Skill Max 9	Flow 15 or more	No Flow 8 or less	Potential for flow 9-14
Emma	6	6			12
Jade	6	6			12
Lucy	6	9	15		

Table 5.14 9c3 Summary of Challenge and Skill scores for ESF4

Lucy's self report indicated that she had experienced flow during the session. This is demonstrated in her talk in this episode by her involvement and interest because she states she has taken some time to prepare her ideas for the verse since their last session (lines 99-100). She also reported that she considered the activities during the lesson to be important and that she had enjoyed the session.

All three participants reported that they had enjoyed the lesson and this is reflected in their talk through laughter (Line 103), praise (line 101) and positive and constructive reactions to each other's ideas (lines 120 and 121).

5.7 Summary of the Findings

11 episodes of verbal interactions of pupils engaged in collaborative composing have been presented and analysed. The participants completed self reports designed to measure the extent to which they had experienced flow. The episodes were discussed in the light of statistical analysis of their responses on the self reports to explore relationships between flow and styles of collaborative talk. The analysis was conducted using a typology for characterising features of collaborative talk identified by Mercer (2004). In general terms, analysis of the group talk has shown the ways in which the quality of dialogue reflected self-reports in that those 'in-flow' (and those who came close) showed higher levels of commitment, involvement, concentration and self confidence than participants who did not report the experience. In their talk, 'in flow' participants showed they were clear about their ideas and how the finished music should sound.

More specifically, answers to the research question: 'How is group talk associated with flow experience?' , are summarised below and suggest that there were some similarities in the relationship between the quality of dialogue and the self reports of the 'in flow' participants' quality of experience across all the year groups:

- they articulated clear goals which they communicated to other members of the group and challenged themselves and participants by showing in their talk that they were seeking to improve the content and the performance of the music
- they appeared to direct the rehearsal and encouraged others to become more involved in the direction process
- they encouraged others to actively participate and to work harder
- their directions were accepted by mid flow and low flow participants

Table 5.15, on the following page, provides an overview of the types of talk that predominated in each episode, indicates which participants reported flow (or nearest) and the type of composing activity for each year group (shown in the final column). The episodes were presented by year group because each one was doing a different composing activity.

Table 5.15: Types of talk exemplified in each episode and who reported flow (or nearest) in each group

Year Group	Main types of talk in each episode	Participants whose self reports indicated flow or highest response if not	Composing activity set by the class teacher
7E	Episode 1 Cumulative/Exploratory	Zoe (16) and Stacey (15) Reported flow	Composing and performing music about the elements and creating a graphic score
7T	Episode 2 Disputational	Amy (15) and Lucy (15) Reported flow	
7L	Episode 3 Cumulative	Megan (16) Reported flow	
8c1	Episode 4 Exploratory	Natasha (14) Pflow	Composing music and words in call and response style based on African songs
8b2	Episode 5 Cumulative	Ella (14) Pflow	
8c3	Episode 6 Cumulative/ Disputational	Isabelle (16) Reported flow	
8b6	Episode 7 Exploratory	Tom (10) Pflow(?)	
9c2	Episode 8 Exploratory	Melissa (18) Report flow (maximum score)	Composing music and lyrics for songs in Britpop style
9b2	Episode 9 Exploratory	James (14) nearly flow	
9b6	Episode 10 Exploratory/Disputational	Stephen (15) Reported flow	
9c3	Episode 11 Exploratory	Lucy (15) Reported flow	

The analysis revealed similarities in the quality of the dialogue for those who reported flow. However, there were some differences in the nature of the interaction between those who reported flow in Year 9 episodes and those in the other groups. The 'in-flow' participants in Episode 8 (Melissa) and Episode 10 (Steven) contributed more by playing or singing than through their talk, so could be described as 'speaking through music'. This was also a feature of the way that the 'in flow' participant in Episode 9 (Lucy) interacted with the other members of her group although she led the verbal interaction as well.

This may be linked to their level of their musical experience in that the participants were more focused on performance given their higher level of musical skill as well as the nature of the task. In the following chapter, the implications of this are discussed further in the course of drawing together the findings from both the quantitative and qualitative elements of the analysis.

Chapter 6

Drawing Together the Findings: Flow Experience and its Relationship to Collaborative music making practices in the music classroom

6.1 Introduction

The purpose of this study was to investigate pupils' experiences of group composing in the secondary classroom based on the concept of flow. The research design used a mixed methods approach that embedded qualitative analyses of selected episodes of group talk within the quantitative component, statistical analysis of self report questionnaires.

The analysis was conducted in two stages to address the following research questions:

1. To what extent do pupils currently experience a state of flow in the music classroom?
2. How is group talk associated with flow experience?

This chapter draws together the findings from each part of the analysis to show how they have provided a comprehensive account of the participants' experiences during musical collaboration. The discussion begins by identifying which experiential dimensions were most flow producing and situates the findings within recent educational research that has used the concept of flow to

study pupils' perceptions of classroom experience. Examples from the talk analysis are used to show how they illuminated and supported the findings.

This is followed by an evaluation of how the ratio of challenge and skill, the principal measure for flow, was found to impact on pupils' perceptions of their interaction both positively and negatively, and the implications of this are discussed. The discussion ends with a summary of the findings together with an evaluation of the success of the study in addressing the research questions and how they contributed to existing knowledge about musical collaboration.

6.2 Flow and Engagement

It was found that more respondents reported high levels of challenge and skill, the principal indicator of flow during the lessons when the main activity was group composing. In these lesson pupils were working unsupervised for most of the lesson. Statistical analysis indicated that Engagement was the most significant predictor for flow experience to occur. This dimension consisted of perceptions of interest, personal expectations and concentration. Of those who did not achieve flow, most reported moderate levels of challenge and/or skills and a small number reported low levels of both. This had been the case in all the lessons but there were important differences in the types of experience reported that indicated that instructional methods influenced the extent to which flow was experienced.

6.3 Flow and Context

Previous research that has used self reports to investigate pupils' quality of experience have provided evidence to suggest that engagement in lessons is related to contextual differences in instructional methods. For example, Yair (2000) found that higher levels of student engagement were reported whilst conducting science experiments, working individually or in groups. Similarly, Shernoff et al (2003) also found that 'students were more engaged during individual and group work...in which concentration, enjoyment and interest were all high' (pg 172). In addition, it was noted that 'perceptions of high competence and autonomy are associated with significant increases in mood, enjoyment, esteem and intrinsic motivation' (pg 172).

In a study that investigated students' motivation in mathematics classes, Schwienle et al (2006) propose that , 'Instructional practices... offering appropriate challenges, supporting competence, emphasising task importance and encouraging positive affect and supportive social relationships influence students' motivation and affect. Such practices together are likely to have multiplicative effects, each reinforcing the other'. (pg 274)

The influence of instructional methods was evident in the talk episodes in the current study. Those in flow were observed taking on the role of teacher (e.g. by praising, setting goals and refocusing the group). These instances appeared to take place spontaneously as there was no discussion about who should take charge. Less hierarchical forms of interaction were also noted as participants demonstrated ideas and advised and helped others to learn their parts. There

were occasions when those 'in flow' appeared to motivate others in the group. A particularly appropriate example was found in Episode 11 from the Year 9 groups. Here, Lucy (who reported flow), was seen to motivate the others in her group through demonstrating and revising her ideas for the lyrics. This kept the others focused and engaged.

Such informal kinds of interaction have been found to be features of 'group learning' in music (Green, 2008) and illustrate how pupils are intrinsically motivated to participate in contexts when they perceive themselves to have more control over how the learning takes place. Examples of intrinsic motivation were not only reported by those in flow. They were also reported by those who perceived an imbalance between their reported levels of challenge and skill. The effects of an imbalance of challenge and skill where initially investigated by Csikszentmihalyi, Rathunde and Whalen (1997) in a five year study of gifted teenagers. The findings in this research accord with their observations that perceptions of high skills and low challenge and vice versa can prevent flow from occurring. This is exemplified as follows:

> "a highly skilled science student is likely to find new material understandable and interesting". However, if the material does not, in Dewey's words, '[arouse] in the learner an active quest for information and production of new ideas' (i.e. if it does not challenge the student), the student is unlikely to enjoy or to learn the material. Conversely, if a science student is constantly bombarded with new information yet feels alienated from the work, the connection between experience and education is subverted" (Csikszentmihalyi, Rathunde and Whalen, 1997 pg 233)

6.4 The Relationship Between Challenge and Skill

There was a large number of responses in the each of these groups and it was considered important to compare the reported experiential dimensions of the sessions with the findings from the talk episodes to pinpoint why flow might not have been experienced. Csikszentmihalyi 's (1997) model of the quality of experience (Chapter 4 Figure 4.1) illustrates how flow is the only channel that 'comes close to matching the overall blend of positive affect, cognitive efficiency and intrinsic motivation that occurs when challenges and skills are simultaneously high' (Hektner, 2006). However, an exact balance between challenge and skill is not always necessary for flow to occur, they just have to both be high to take into account individual and contextual factors (Moneta and Csikzsentmihalyi, 1999). The other channels, i.e. those that are not flow producing in Figure 4.1, illustrate that the range of experiential dimensions are related to unequal or low levels of challenge and skill depending on the ratio e.g. boredom/ arousal or anxiety/relaxation. Through statistical analysis, comparisons were made between the experiential differences of those reported high challenge and low skill and vice versa and the findings will now be discussed.

6.5 Flow and Intrinsic Motivation (High Challenge/Low Skill)

Statistical analysis revealed that those who reported higher levels of challenge than skill were intrinsically motivated and stimulated but had negative perceptions of their own ability. Evidence of this is found in the talk analysis. For example, Zoe (Episode 1, Year 7) reported high levels of challenge and skill, and her involvement influenced Ryan. His ESF scores for challenge were

higher than those for skill and her input appeared to motivate him to contribute to the cumulative nature of the group talk. He increased his contribution to the group and he began to demonstrate to and recap for the others. At one point he commented 'This is hard, isn't it', to suggest that he was finding the music difficult. However, he is seen to rise to the challenge in this episode by being active in planning and performing.

Another respondent who reported high challenge but low skill is Tom in episode 7 (Year 8). Although none of the participants in this group reported experiencing flow, his utterances throughout the session illustrated that he contributed to the development of the music by making suggestions and encouraging the others to work despite their reluctance. His self report indicated a high level of challenge but he perceived himself to be lacking the skill. However, his utterances indicated that he had some clear ideas about how the instruments should be used and how they should sound, suggesting that he had the musical skills to contribute to their composition but may have lacked confidence because the others were reluctant to join in.

6.6 Flow and Potency (High skill/Low Challenge)

Statistical analysis linked reports of higher skill than challenge with perceptions of self confidence (i.e. efficacy) but not with arousal during group work. Arousal is often associated with interest as Csikszentmihalyi pointed out, and at this point the topic for group composing was not new: they had been working on it for three weeks. Lack of interest is exemplified in Episode 5 (Year 8) where the verbal dialogue between the participants focuses on their performance. Here, there are features of disputational talk which are similar to those identified in

examples provided by Mercer (2004), who described how although participants take an active part in discussions, there is little evidence of joint, cooperative engagement with the on-going activity seen in the use of commands and assertions giving the interaction an unproductive, disputational quality.

6.7 Why did some participants not experience flow during some of the group composing lessons?

The reasons why flow was not experienced seem to be connected to lower perceptions of self confidence, sociability and interest, although environmental factors may also have had some effect as well. In other words some respondents may have felt their musical skills were not adequate to the task, may not have enjoyed working in the group context, preferring to work individually or in pairs or may not have been working with people they liked.

The participants experiencing high challenge and high skills reported that interaction with others in the group was important to them, and this was found to be a significant predictor for flow in the findings from the quantitative analysis. The next section will discuss this further in terms of the extent to which their talk (i.e. those 'in flow') was more productive.

6.8 Flow and Interaction

The Year 9 episodes referred to at the end of chapter 5 exemplified the informal nature of these interactions. It also shows how verbal and non-verbal interaction is integral to flow in group composing activities. In Episode 11, the 'in flow'

participant (Lucy), was expressing opinions which were being listened to by the others. They were responding to her in a cyclical process; as immediate and positive feedback was received, more ideas were suggested as she strove to improve the lyrics. In Episodes 8 and 10, the 'in flow' participants, Melissa and Steven, interacted with the others through their playing and singing. A further consideration is the levels of experience in music that the Year 9 pupils had. The lessons took place at the end of Key Stage 3, at the end of the summer term so many the participants had been working collaboratively for three years.

Other research has indicated that working with friends can influence the quality of the talk which in turn influences the quality of the music produced (Miell & MacDonald, 2000). The participants in the groups had chosen to work together and evidence that they generally felt comfortable with each other is shown by the informal ways these participants interacted; they praised each other, laughed and sang together. The last point is an important one because there were many examples throughout the talk episodes where communication was through 'musical talk', either through singing, beating time or playing. In this study, Mercer's typology of talk was applied to explain both verbal and musical communication. In Episodes 8 and 11, Melissa and Lucy demonstrated features of exploratory musical talk as they offered ideas for joint consideration and actively participated with the others to develop ideas by trial and error. Miell and MacDonald (2000) applied the notion of transactive communication to investigate this aspect of interaction in collaborative musical participation. Transactive communication is explained as the way in which 'the child extends, elaborates or otherwise works on ideas that have previously been raised in the interaction – either by themselves or their partner' (pg 353). Green (2008) has

also identified musical talk as a feature of successful collaborative music making and uses the notions of 'musicking' and 'inter-sonic communication' to explain how this is a feature of flow (pg 124).

The interaction also exemplifies the kind of spontaneous 'in the moment' collaboration that is similar to group flow (Sawyer, 2006). However, this is not the same as the individual psychological state of flow that is being discussed here, although the year 9 group referred to earlier may have come closest to what Sawyer meant i.e. 'Group flow is a property of the entire group as a collective unit. In group flow, everything seems to come naturally: the performers are in interactional synchrony. In this state, each of the group members can feel as if they are able to anticipate what their fellow performers will do before they do it' (pg 158).

6.9 Conclusion

This study set out to investigate pupils' experiences of group composing based on the concept of flow. The mixed methods design enabled a large number of experiential items to be reported and statistically analysed and to provide the flexibility to isolate factors of relevance in a variety of contextual and experiential dimensions. The analysis of talk enabled these findings to be investigated in more detail and provided observable examples of how reported experience was manifested in the course of real life classroom interaction.

The principal findings are:

- reports of flow experience were dependent on perceived high levels of challenge and skill
- levels of challenge and skill did not always have to be equal but they did need to be high
- more pupils experienced flow when they were working in groups than in whole class, teacher directed activities.
- successful collaboration was found to occur when those in flow felt able to communicate their ideas, particularly through musical interaction
- those who did not report flow seemed to have been affected by perceptions of negative affect i.e. lack of arousal or self confidence

The results confirmed findings similar to those in educational studies about the importance of engagement and context (e.g. Shernoff et al 2003; Turner et al, 1998). However, these studies had not used the ESM in conjunction with the analysis of talk to study flow in collaborative settings in the context of the music classroom. As the current study is the first to investigate musical participation in this way, it is anticipated that the findings will provide a starting point for other investigations of pupils' engagement in terms of flow. Suggestions on how to move forward will be made in the concluding chapter together with some discussion about how the findings have implications for current approaches to music teaching and learning.

Chapter 7

Broadening the Findings: Research Questions, Areas of Development and Implications

7.1 Introduction

This concluding chapter reviews the research in terms of the overall aims of the study and discusses the findings as they relate to broader issues in education.

There are four sections. The first reviews why these particular research questions were asked and how the concept of flow was an appropriate theoretical basis to use for studying the nature and quality of pupils' experiences of group composing. Following this, the methodology for the study is discussed and the section identifies the extent to which the mixed methods approach was effective in addressing the research questions. The third section identifies areas for development together with suggestions for further research that became apparent in the light of the findings. The final section discusses the wider implications of the study and contextualises the findings within educational and psychological research on musical participation. The findings are broadened to discuss how they relate to some core issues related to teaching and learning in the music classroom.

7.2 Relevance of the Concept of Flow

Flow experience happens when people have clear goals, receive immediate feedback and are deeply immersed in an activity. Applying flow theory to the study of musical participation is a useful way of gauging the nature and quality of pupils' experiences in collaborative music making because of the focus on self reports of involvement and concentration. The relevance of this is reflected in the National Curriculum guidelines for music that highlight the need for integrating listening, composing and performing in collaborative contexts. Furthermore, recent reports on music education in schools have emphasised the need for teachers to 'provide a high level of challenge and ensure pupils make musical progress' (Ofsted 2009; pg 13). High levels of challenge, together with high levels of skill, are required to achieve and maintain a flow state, so this was found to be an appropriate theoretical basis for studying musical involvement.

Self reports were used to answer the principal research question in this study:

To what extent do pupils experience flow in the music classroom?

This was exploratory research to find out if the context of group composing was flow-producing. Music teachers regularly encourage pupils to work in groups and this study was designed to investigate the extent to which this is an effective learning context.

To support the findings from the self reports, a second question was investigated:

How is group talk associated with flow experience?

Quantitative analysis of the self reports indicated that flow was experienced and more pupils experienced it when the main activity was group composing. The most important indicators for flow were living up to one's own expectations, being interested, concentrating and interacting with others. Many respondents may have come close to achieving flow, but lower levels of perceived challenge and/or skill negatively influenced participants' mood and level of engagement.

The qualitative analysis of group talk provided indications to explain and support the findings from the quantitative data. It was found that those who reported flow positively influenced the interaction. Flow experience was related to exploratory talk, in that those in flow were involved in making suggestions, sharing ideas and actively participating. Exploratory talk often generated positive feedback, as ideas were suggested or played that received praise.

Those participants experiencing flow supported others by confirming or modelling accumulated knowledge about the music and reflected aspects of cumulative talk. Cumulative talk was related to perceptions of challenge and skill. Those in flow were clear (i.e. had self imposed goals) about how the music should sound and were able to summarise the groups' ideas and encourage other group members who may not have experienced flow to be more confident about their abilities or to try harder. In this research, both types of talk

contributed to productive and successful interaction. Reasons for not experiencing flow were related to the responses on the self reports about perceived lack of skills and challenge and various negative responses to group work. These were reflected in the talk analysis in instances where participants ignored each others' suggestions and ideas and were features of disputational talk. In some groups this hindered progress.

An unexpected finding was the extent to which the participants used musical interaction during the collaborations and how effective this was in communicating ideas (particularly for those in flow but also across the sample). This would not have emerged if the study had focused only on the .analysis of the self reports and exemplifies the usefulness of the mixed methods approach. The next section discusses the mixed methods research design in more detail to show why it was particularly appropriate and also identifies areas for development.

7.3 Using a Mixed Methods Approach

Using a mixed methods approach is relatively unusual in practice –based education research especially in music. Teachers tend to investigate their own practice using qualitative methods such as interviews, participant observations and reflexive journals. However, the mixed methods approach was adopted here because the application of the Experience Sampling Method requires statistical analysis. Including the observation data for the analysis of group talk made it possible to link participants' responses on their self reports with their talk to assess in more depth the ways in which flow was enacted.

There were a number of practical considerations when obtaining self report records and observation data in a classroom context. The most important aspect is to establish a good research alliance with the participants. In this study, access to the participating schools was established well in advance so that by the time the observations were due to start, the staff and pupils were used to seeing another music teacher in their classrooms. To ensure the best possible responses on the forms, it was important to be present when they were administered. This has been found to be relevant in other educational research using the ESM because it encourages the pupils to continue to participate in the study (Hektner et al 2006). One further consideration was the decision to administer the forms at the end of a lesson rather than using the more usual 'beep' method to summon participants to fill in self reports at random points during the lessons. In music lessons, pupils are generally engaged in practical activity that makes the 'beep' method impractical. Administering the form at the end of lessons avoided disturbing the interactions but may have lessened the 'in the moment' aspect of measuring flow.

7.4 Some Limitations: Areas of Development

7.4.1 Teacher Assessments.

In the original research design a third component was to be embedded into the research design to include teachers' assessments of the compositions and performances from the group composing sessions. The assessment data would have enhanced the validity and theoretical scope of the study because of the important relationship between flow and music collaboration (the process), and composition and performance (product), in order to examine the link between

flow experience and the aims of the classroom activities; i.e. to produce good quality compositions. The intention was to investigate whether those who reported flow produced higher quality compositions than groups where no-one experienced flow.

Unfortunately, the teacher assessments were not included in the reported study due to problems at data collection level. Teachers did not complete the assessments as required. This was due in part to a lack of specific emphasis on the part of the researcher specifying exactly how they should assess the performance data. (Copies of the completed assessment forms are re-produced in appendix 6). All but one of the teacher assessors ascribed national curriculum levels to the pieces rather than the more descriptive data that was actually required.

Although this was a drawback to the study, the fact that the single ascription of a national curriculum level with no other information makes relevant larger questions about the extent to which teachers focus on academic performance and the confirmation of expertise rather than creativity. This issue is something that permeates throughout music education and has been noted in inspection reports for music in the past few years (Ofsted, 2009, pg 31).

7.4.2 Longitudinal element

Another issue not covered in this study is the notion of the longer term maintenance and sustaining of flow over time. This investigation focused on the group composing lessons. However, incorporating a more in-depth analysis of the pupils' reports with observation data of flow experience to cover the whole

three to four week period may have provided further insights and answers to the research questions.

7.4.3 The scope of flow

Flow is a broad psychological concept and this study has shown that measuring it involves the inclusion of a large number of items on the self reports that were not all reported here. There is a range of psychological concepts that are particularly relevant to studying pupils' perceptions in a creative area such as music. These include issues such as temperament, the musical self and perceptions of musical identity. Further research using self reports could include items to investigate how these influence pupils' perceptions of engagement in classroom music.

7.5 Implications of the research and areas identified for future research

The findings have contributed to and supported those of other studies that have investigated musical engagement in schools. The self reports indicated that many pupils enjoyed engagement with these musical activities and this has been found in other research (e.g. Lamont et al 2003). This is perhaps surprising because many of the musical activities in lessons are directed by teachers and the pupils do not have much choice about what these will be. An advantage in this study was that the researcher was a full time music teacher and able to study what happens in music lessons on a week to week basis. Because of this, it was possible to gain much deeper insights about pupils' engagement that has not only confirmed the findings of other research but has

also expanded on these to raise a number of important issues about how pupils perceive their music lessons.

There are two areas that emerged here. Firstly, the finding that a large number did not perceive themselves to be very challenged suggests that music teachers need to focus more on what the pupils already know rather than the development of performance skills and musical expertise. Participants in this study showed themselves able to work together to compose coherent and structured compositions in a variety of styles. They generally communicated effectively both verbally and through music. Those in flow showed themselves to be creative and clear about what they wanted to achieve and influenced others to contribute to the musical output of the groups. Very few of those who reported flow were involved in any kind of formal musical training. Further research using flow theory could develop this aspect to explore what is needed to challenge pupils more.

The second area for further research was to explore the way in which many participants communicated through the music. This suggests that the participants possessed much deeper musical understanding than was expected. Research has focused on how very young children will engage in musical games and songs and to indicate the benefits of musical play for creating bonds between caregivers (Dissanayake, 2000). Musical play has also been found to assist in creating contexts to stimulate language development and social bonds (Malloch and Trevarthen, 2008). More recently, there is empirical evidence to show that 'those who are relatively more skilled and

developed in their musical understanding...are statistically highly likely to report themselves more socially included' (Welch et al, 2009).

The relationship between music making, language and communication is important for emotional well-being and this study highlights a perceived gap to suggest that more empirical research should be conducted to investigate how pupils in secondary schools can benefit from being given more opportunities to make music together with this in mind. During the lessons observed here, pupils were stimulated by musical activities that involved call and response, song writing and inventing and developing music phrases through imitation and repetition. It was observed that participants' listening skills, particularly those who reported flow, were often quite advanced and showed high levels of concentration and involvement.

In conclusion, this was an exploratory study and there were no expectations at the outset that pupils would report flow experience in classroom based compulsory musical activities. The participants showed that they were able to collaborate productively, that they generally enjoyed working together unsupervised and could stay focused on the task. For these reasons, the study has shown the value of studying pupils' intrinsic motivation in the music classroom by applying the concept of flow.

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Appendix 1a Timetable for Data Collection

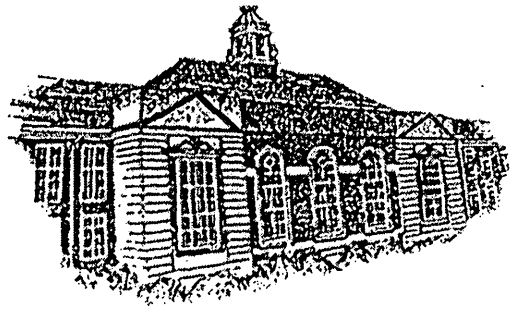
No	Date	Raw data type	Year Group	Transcript	Video	Audio Final Perf.	ESFs
1	**21/11/06**	Small Group	Year 7 7L	✓	✓	✓	✓
2	**29/11/06**	Small Group	Year 7 7E	✓	✓	✓	✓
3	**29/11/06**	Small Group	Year 7 7T	✓	✓	✓	✓
4	**30/11/06**	Small Group	Year 7 7N	x	x	✓	✓
5	**25/06/07 Mon 1***	Small Group Week 3	Year 8 8c1 (AJM)	✓	✓	✓	✓
6	**25/6/07 Mon1**	Small Group Week 4	Year 8 8c3 (JHD)	✓	✓	✓	✓
7	**20/6/07 Wed 4**	Small Group Week 3	Year 8 8b2 (AB)	✓	✓	✓	✓
8	**20/6/07 Wed 5**	Small Group Week 3	Year 8 8c6 (AB)	✓	✓	✓	✓
9	**25/06/07 Mon 5**	Small Group Week 4	Year 9 9c3 (JHD)	✓	✓	✓	✓
10	**27/06/07 Wed 1****	Small Group Week 3	Year 9 9c2 (JHD)	✓	✓	✓	✓
11	**29/06/07 Fri 2**	Small Group Week 4	Year 9 9b6 (JHD)	✓	✓	✓	✓
12	**29/06/07 Fri 3**	Small Group Week 4	Year 9 9b2 (AJM)	✓	✓	✓	✓

* 8c1 lesson in Week 3 (18/06/07) cancelled: Class teacher at internal interview

**9c2 lesson in Week 3 (20/06/07) cancelled: Yr 9 inter-form rounders

IIIII

PHILIPS HIGH SCHOOL



Higher Lane
Whitefield
Manchester

M45 7PH

Telephone: 0161 351 2200
Fax: 0161 796 3445

October 4th 2006

Dear Mr XXX

I am Director of Music at Philips High School, Whitefield and a postgraduate research student in education with The Open University (Doctorate in Education, 2005-2008). My research is concerned with the classroom experiences in music of pupils at Key Stage 3 in two secondary schools in Bury: XXX High School and XXX High School.

Subject to your approval, I wish to observe a range of music lessons over a 6-month period. As I would like to video-record the lessons and interview several pupils I am required to obtain the signed consent of the parent or guardian of the all those involved. A copy of the proposed letter to parents is attached.

Yours sincerely

Catherine Preston BA (Hons), MA in Education (The Open University), BSc (Psychology), MSc: Music Psychology (Keele University)

Appendix 1c Letter to Parent/Carer and Permission Pro Forma

Dear Parent/Carer,

I am Director of Music at Philips High School, Whitefield and a postgraduate research student in Education with The Open University (Doctorate in Education).. My research is about the classroom experiences in music of pupils in secondary schools in Bury and Bolton.

I plan to research the classroom experiences of Year 8 and Year 9 pupils at Canon Slade. Mrs Moore and her staff have kindly agreed to give me access to their classes with a view to observing a range of music lessons over a 4 week period. As I would like to video-record the lessons, I am required to obtain the signed consent of the parents/guardians of the all the pupils involved.

I would also like to gain an insight into what some of the pupils think and feel about their classroom learning experiences on a lesson-to-lesson basis. This will involve pupils completing questionnaires. Again, with your own and your child's consent, I plan to do this at an appropriate time on the day of their music lesson.

All recordings would be solely for my own personal use and neither the name of the pupils will be given in the writing up of the research. Also, any information given to me by the pupils in the questionnaires will remain anonymous.

If you agree to this, I would be grateful if your child would return the signed statement of consent to give to me for next week's lesson

If you have any questions or would like additional information about this research, you are very welcome to contact me either via email or at my school.

Thank you in anticipation of your support

Yours sincerely

Catherine Preston BSc, MSc (Music Psychology, Keele University)
Director of Music, Philips High School

The Open University

Doctorate in Education: The Open University (2005-2008)

Statement of Consent for my child to take part in Educational Research conducted by Ms Catherine Preston (Philips High School):

I give consent for my child to be video-recorded and, if he or she wishes, to be interviewed as a part of research conducted by Ms Catherine Preston

Name of Child..... Form.....

Signature of parent/guardian .....

Date .....

Appendix 1d Follow up Letter to Head Teacher

June 30th 2007

Dear Mr XXX

You may recall towards the end of the Autumn term last year I conducted a series of observations of Ms XXX Year 7 music lessons as part of the field work for my EdD thesis (Doctorate in Education, The Open University). During this term, further observations of Year 8 and 9 music lessons at XXX School in XXX have also taken place and data collection in both schools is now complete.

During the four week period that I visited XXX High School I was made very welcome and the assistance offered by Ms XXX and the pupils in Year 7 has enabled me to secure very high quality data.

Throughout the process, the professionalism and dedication of Ms XXX was most impressive and the conduct of the pupils was exemplary. It was a privilege to observe such high quality teaching and learning and I am most grateful to have had the opportunity to carry out part of my research at your school. I will make the findings of the study together with a copy of the thesis available to you and the Music Department by the end of next year.

Yours sincerely

The Open University

Catherine Preston BA, BSc (Psychology),
MA in Education (The Open University),
MSc (Music Psychology, Keele University), Cert Ed, LTCL
Director of Music, Philips High School
catherinepreston8@btinternet.com

Appendix 2 Experience Sampling Form

The Elton High School - Music Lesson Week 3 7T
Year 7 Elements Module
Teacher Miss Mills

Dear Pupil

Please would you think about today's lesson and <u>circle</u> your answers to the questions in sections 3,4,5,6 and 7.

1) What was the main activity you were doing in today's lesson

_____

2) What other things were you doing?

_____

3) During the lesson

	Not at all		Not much			Mostly			Very much	
Did you **enjoy** what you were doing?	0	1	2	3	4	5	6	7	8	9
Was the lesson **interesting?**	0	1	2	3	4	5	6	7	8	9
How well were you **concentrating?**	0	1	2	3	4	5	6	7	8	9
Were you fulfilling **your own expectations?**	0	1	2	3	4	5	6	7	8	9
Did you feel **in control** of the activities?	0	1	2	3	4	5	6	7	8	9
Did the activities allow you to be **involved?**	0	1	2	3	4	5	6	7	8	9
Did you have the **abilities to deal** with the activities?	0	1	2	3	4	5	6	7	8	9
Were the activities **important to you?**	0	1	2	3	4	5	6	7	8	9
Were others **expecting** a lot from you?	0	1	2	3	4	5	6	7	8	9
Were you **succeeding** at what you were doing?	0	1	2	3	4	5	6	7	8	9
Did you wish you **were doing something else?**	0	1	2	3	4	5	6	7	8	9
Did you **feel good** about yourself?	0	1	2	3	4	5	6	7	8	9

Turn over

Appendix 2 Experience Sampling Form

4. While you were in the lesson were you -

	very	mostly	not very	neither	not very	mostly	very	
happy	■	□	●	—	●	□	■	sad
weak	■	□	●	—	●	□	■	strong
open	■	□	●	—	●	□	■	closed
active	■	□	●	—	●	□	■	still
cheerful	■	□	●	—	●	□	■	irritated
involved	■	□	●	—	●	□	■	uninvolved
excited	■	□	●	—	●	□	■	bored
lonely	■	□	●	—	●	□	■	part of group
alert	■	□	●	—	●	□	■	sleepy
relaxed	■	□	●	—	●	□	■	uptight
proud	■	□	●	—	●	□	■	ashamed
clear	■	□	●	—	●	□	■	confused
cooperative	■	□	●	—	●	□	■	competitive

5. Whilst talking with other people -

	Not at all		Not much			Mostly			Always	
Were you able to express your opinions?	0	1	2	3	4	5	6	7	8	9
Were others really listening to what you had to say?	0	1	2	3	4	5	6	7	8	9
Did you care what others were saying?	0	1	2	3	4	5	6	7	8	9

	Not at all		Not very			Mostly			Very much	
6. How challenging was music today?	0	1	2	3	4	5	6	7	8	9

	Not good		Sometimes good			Quite good			Very good	
7. How were your skills in music today?	0	1	2	3	4	5	6	7	8	9

8. If you had a choice...

Who would you be with? _____

What would you be doing? _____

Thank you for your responses to these questions

Appendix 3 Coding Scheme for ESFs

Variable Name

Variable Name				
ID	ID number of pupil			
GENDER	Male/Female			
GROUP1	ESF week number			
GROUP2	Form			
DAY	Day of the month			
TIME	Time of completion – military time (HHMM)			

Codes for DOING1, DOING2

- **DOING1: Primary activity during the lesson**
- **DOING2: Other activities during lesson**

Q1 DOING1

100 Listening to music	230 Doing music
101 Listening to music/ taking notes	231 Playing music
102 Listening/discussion	232 Listening to music
103 Participating in discussion	233 Composing music
104 Working with group	234 Playing music with friends
105 Working alone	235 Chilling out
106 Solo performance	236 Creating a piece of music
107 Group performance	237 Practising/rehearsing music
108 Watching video/film	238 Performing music
109 Talking to teacher	239
110 Test/quiz	240 Talking about the elements
	241 Finishing our music pieces
112 Planning our work/graphic score	242 Doing our elements sheets/composing
113 Learning about the elements	243 Reading music
114 Recording/practising our music	244 Listening and planning
	245 Analysing music
	99 Missing

Q2 DOING2

100 Listening to music	230 Doing music
101 Listening to music/ taking notes	231 Playing music
102 Listening/discussion	232 Listening to music
103 Participating in discussion	233 Composing music
104 Working with group/cooperating	234 Playing music with friends
105 Working alone	235 Chilling out
106 Solo performance	236 Writing our homework
107 Group performance	237 Practising/rehearsing music
108 Watching video/film	238 Making up an ostinato
109 Talking to teacher	239 Recording our music
110 Test/quiz	240 Playing instruments
111 Unspecified/studying/working	241 Completing questionnaire
112 Planning/discussing our work/graphic score	242 Writing/practising rhythms
113 Choosing/picking our instruments	243 Nothing
114 Doing graphic score	244 Learning about the elements
115 Sitting around	245 Assessment
116 Lesson starters	246 Talking about the elements/music
	247 Doing our elements sheets
	248 Singing our favourite songs
	99 Missing

3. During the lesson

ENJOY	**Did you enjoy what you were doing?**
INTEREST	**Was the lesson interesting?**
CONC	**How well were you concentrating?**
EXPO	**Were you fulfilling your own expectations?**
CONTROL	**Did you feel in control of the activities?**
INVOLVE	**Did the activities allow you to be involved?**
ABILITY	**Did you have the abilities to deal with the activities?**
IMPY	**Were the activities important to you?**
EXPY	**Were others expecting a lot from you?**
SUCCESS	**Were you succeeding at what you were doing?**
WISHDOE	**Did you wish you were doing something else?**
GOOD	**Did you feel good about yourself?**

4. While you were in the lesson were you -

HAPPY Very happy ↔ very sad

WEAK Very weak ↔ very strong

OPEN Very open↔very closed

ACTIVE Very active↔very still

CHEERFUL Very cheerful↔very irritated

INVOLVED Very involved↔very uninvolved

EXCITED Very excited↔very bored

LONELY Very lonely↔included in a group

ALERT Very alert↔very sleepy

RELAXED Very relaxed↔very uptight

PROUD Very proud↔very ashamed

CLEAR Very clear↔very confused

COOPERATIVE Very cooperative↔very competitive

5. Whilst talking with other people –

EXPRESSY Were you able to express your opinions?

LISTENY Were others really listening to what you had to say?

CAREY Did you care what others were saying?

6. CHALLENGE How challenging was music today?

7. SKILLS How were your skills in music today?

8. WISHWITH If you had a choice who would be with?

300 A smart music composer	311 My dinner
301 With friends	312 My bed
302 In music	313 No-one
303 Nothing	314 Castlecoft
304 With my family/mum	315 Don't know
305 No response	316 In aother subject
306 With the teacher/in school	
307 With my computer	
308 not bothered	
309 Where I am now	
310 With my group	99 Missing

WISHDO If you had a choice what would you be doing?

400 Telling a composer to do my work	418 Learning/doing lessons
401 talking	419 playing/with friends
402 Ghost hunting	420 Working in a team
403 Making a band	421 listening to others
404 Playing the drums	422 not bothered
405 Playing a computer game	423 On the internet
406	424 Cooking
407 Doing another subject	425 Bike riding
408 Dancing	426 Watching TV
409 Illegible	427 Working/working hard
410 Having a break	428 Playing a game
411 Having lunch	429 Going out/walking4
412 Playing/learning instruments	430 On holiday
413 Doing/performing music	431 Eating
414 Nothing	432 hanging out/chilling out/having a laugh/fun
415 Playng sport	433 Sleeping
416 Same as the boys	434 in town/shopping/
417 playstation	435 Having fun in music
	436 Fixing trains
99 Missing	437 Don't know
	438 Thinking
	439 Watching/observing

Appendix 4 Descriptive Statistics for Years 7, 8 and 9

Descriptive Statistics Year 7 Whole Sample

Variable	No.	Min	Max	Mean	Standard Deviation
Activity Related Variables Range 0-9*					
ENJOY	296	0	9	**6.41**	2.44
INTEREST	290	0	9	**5.94**	2.26
CONCEN	288	1	9	**6.62**	1.98
EXPO	291	0	9	**6.15**	2.22
CONTROL	290	0	9	**5.67**	2.53
INVOLVE	290	0	9	**6.81**	2.40
ABILITY	292	0	9	**6.50**	2.13
IMPY	284	0	9	**5.66**	2.47
EXPY	291	0	9	**5.53**	2.51
SUCCESS	291	0	9	**6.62**	2.13
WISHDOE	292	0	9	**4.77**	3.06
GOOD	294	0	9	**6.23**	2.50
****Mood and Behaviour (MR) Related Variables Range 1-7****					
HAPPY↔SAD	289	1	7	**2.20**	1.37
WEAK↔STRONG	279	1	7	**4.82**	1.73
OPEN↔CLOSED	275	1	7	**2.56**	1.51
ACTIVE↔STILL	272	1	7	**2.43**	1.52
CHEERFUL↔IRRITATED	273	1	7	**2.43**	1.54
INVOLVED↔UNINVOLVED	277	1	7	**2.35**	1.64
EXCITED↔BORED	284	1	7	**3.08**	1.88
LONELY↔IN A GROUP	276	1	7	**5.15**	1.71
ALERT↔SLEEPY	277	1	7	**2.58**	1.60
RELAXED↔UPTIGHT	277	1	7	**2.57**	1.56
PROUD↔ASHAMED	277	1	7	**2.45**	1.31
CLEAR↔CONFUSED	279	1	7	**2.55**	1.60
COOPERATIVE↔COMPETITIVE	278	1	7	**2.37**	1.51
Social and Talk (ST) Related Variables Range 0-9***					
Were you able to express your opinions?	285	0	9	**6.20**	2.38
Were others really listening to what you had to say?	280	0	9	**5.42**	2.74
Did you care what others were saying?	281	0	9	**6.84**	2.41
Challenge and Skill (CS) Variables Range 0-9****					
How Challenging was music today?	285	0	9	**5.19**	2.45
How were your skills in music today?	287	0	9	**6.10**	2.33
Flow – (F) Independent Variable Range 0-18†					
Challenge +Skill	286	2	18	**11.25**	3.73

***AR Variables: 0-1 Not at all, 2-4 Not much, 5-7 Mostly, 8-9 Very much**
****MR Variables: 1 Very, 2 Mostly, 3 Not very, 4 Neither, 5 Not very, 6 Mostly, 7 Very**
*****ST Variables: 0-1 Not at all, 2-4 Not much, 5-7 Mostly, 8-9 Very much**
******CS Variables: 0-1 Not at all, 2-4 Not much, 5-7 Mostly, 8-9 Very much**
† F Variable: 0-4 Not at all, 5-8 Not much, 9-14 Mostly, 15-18 Very much

Appendix 4 Descriptive Statistics for Years 7, 8 and 9

Descriptive Statistics Year 8 Whole Sample

Variable	No.	Min	Max	Mean	Standard Deviation
Activity and Motivation Related Variables Range 0-9*					
ENJOY	323	0	9	**6.49**	1.95
INTEREST	320	0	9	**6.11**	2.03
CONCEN	321	0	9	**5.89**	1.99
EXPO	324	0	9	**6.17**	2.00
CONTROL	320	0	9	**5.59**	2.31
INVOLVE	321	0	9	**7.03**	1.98
ABILITY	321	0	9	**6.81**	1.77
IMPY	321	0	9	**4.82**	2.41
EXPY	320	0	9	**4.85**	2.49
SUCCESS	323	0	9	**6.25**	2.02
WISHDOE	322	0	9	**3.88**	2.92
GOOD	324	0	9	**5.58**	2.45
****Mood and Behaviour (MR) Related Variables Range 1-7****					
HAPPY↔SAD	322	1	7	**2.21**	1.18
WEAK↔STRONG	314	1	7	**4.99**	1.62
OPEN↔CLOSED	271	1	7	**2.58**	1.41
ACTIVE↔STILL	320	1	7	**2.41**	1.38
CHEERFUL↔IRRITATED	322	1	7	**2.50**	1.56
INVOLVED↔UNINVOLVED	273	1	7	**2.21**	1.41
EXCITED↔BORED	319	1	7	**2.82**	1.62
LONELY↔IN A GROUP	318	1	7	**5.38**	1.93
ALERT↔SLEEPY	276	1	7	**2.88**	1.62
RELAXED↔UPTIGHT	317	1	7	**2.81**	1.58
PROUD↔ASHAMED	318	0	7	**2.90**	1.62
CLEAR↔CONFUSED	273	1	7	**2.62**	1.55
COOPERATIVE↔COMPETITIVE	319	1	7	**2.68**	1.64
Social and Talk (ST) Related Variables Range 0-9***					
Were you able to express your opinions?	322	0	9	**5.96**	2.39
Were others really listening to what you had to say?	322	0	9	**5.61**	2.63
Did you care what others were saying?	322	0	9	**6.30**	2.57
Challenge and Skill (CS) Variables Range 0-9****					
How Challenging was music today?	273	0	9	**4.49**	2.51
How were your skills in music today?	266	0	9	**6.02**	2.32
Flow – (F) Independent Variable Range 0-18†					
Challenge +Skill	217	0	18	**10.26**	3.82

***AR Variables: 0-1 Not at all, 2-4 Not much, 5-7 Mostly, 8-9 Very much**
****MR Variables: 1 Very, 2 Mostly, 3 Not very, 4 Neither, 5 Not very, 6 Mostly, 7 Very**
*****ST Variables: 0-1 Not at all, 2-4 Not much, 5-7 Mostly, 8-9 Very much**
******CS Variables: 0-1 Not at all, 2-4 Not much, 5-7 Mostly, 8-9 Very much**
† F Variable: 0-4 Not at all, 5-8 Not much, 9-14 Mostly, 15-18 Very much

Appendix 4 Descriptive Statistics for Years 7, 8 and 9

Table 8: Descriptive Statistics Year 9

Variable	No.	Min	Max	Mean	Standard Deviation
Activity Related Variables Range 0-9*					
ENJOY		0	9	**6.12**	2.09
INTEREST		1	9	**5.99**	1.92
CONCEN		0	9	**6.20**	1.90
EXPO		0	9	**6.17**	1.87
CONTROL		0	9	**5.92**	2.03
INVOLVE		0	9	**6.82**	1.94
ABILITY		0	9	**6.47**	2.00
IMPY		0	9	**4.88**	2.50
EXPY		0	9	**5.02**	2.23
SUCCESS		0	9	**6.11**	2.08
WISHDOE		0	9	**4.52**	2.99
GOOD		0	9	**5.95**	2.30
****Mood and Behaviour (MR) Related Variables Range 1-7****					
HAPPY↔SAD		1	7	**2.12**	1.22
WEAKS↔TRONG		1	7	**4.73**	1.60
OPEN↔CLOSED		1	7	**2.73**	1.40
ACTIVE↔STILL		1	7	**2.78**	1.60
CHEERFUL↔IRRITATED		1	7	**2.19**	1.31
INVOLVED↔UNINVOVLED		1	7	**2.15**	1.17
EXCITED↔BORED		1	7	**2.85**	1.53
LONELY↔IN A GROUP		1	7	**5.55**	1.65
ALERT↔SLEEPY		1	7	**2.93**	1.56
RELAXED↔UPTIGHT		1	7	**2.50**	1.34
PROUD↔ASHAMED		1	7	**2.83**	1.32
CLEAR↔CONFUSED		1	7	**2.55**	1.34
COOPERATIVE↔COMPETITIVE		1	7	**2.33**	1.26
Social and Talk (ST) Related Variables Range 0-9***					
Were you able to express your opinions?		0	9	**6.43**	2.17
Were others really listening to what you had to say?		0	9	**6.39**	2.15
Did you care what others were saying?		0	9	**6.54**	2.28
Challenge and Skill (CS) Variables Range 0-9****					
How Challenging was music today?		0	9	**5.16**	2.13
How were your skills in music today?		0	9	**5.72**	2.26
Flow – (F) Independent Variable Range 0-18†					
Challenge +Skill		0	18	**10.56**	3.58

***AR Variables: 0-1 Not at all, 2-4 Not much, 5-7 Mostly, 8-9 Very much**
****MR Variables: 1 Very, 2 Mostly, 3 Not very, 4 Neither, 5 Not very, 6 Mostly, 7 Very**
*****ST Variables: 0-1 Not at all, 2-4 Not much, 5-7 Mostly, 8-9 Very much**
******CS Variables: 0-1 Not at all, 2-4 Not much, 5-7 Mostly, 8-9 Very much**
† F Variable: 0-4 Not at all, 5-8 Not much, 9-14 Mostly, 15-18 Very much

Field Notes November/December 2006

XXX High School, Bury – Dates and timetable
Year Group - Year 7
Topic - *The Elements*
Classes – 7E, 7L, 7N, 7T (inset dates and times)
Teacher – Miss XXX

Permission letters and video consent forms were given to teacher, head teacher and pupils during the first week.

Lesson 1 – (All classes)
Listening (Janacek – New Music Matters) – ESF completed at the end of the lesson
Responses were done well with no apparent problems apart from having a little difficulty with understanding 'a little' and 'somewhat'. Will need to re-word headings and have a wider range of responses ie 10 point Likert scale.
Form re-designed based on the ESFs in Hektner et al (2006) and in Csikzsentmihalyi et al (1988) - original and revised copies attached.
Worksheets/flashcards and lesson plans obtained from teacher.
Question to consider – are responses affected by time of day? eg 7L completed just before lunch and 7E at the end of the first lesson of the day.

Further revision to questionnaire - headings for questions 5 and 6 changed to: Not at all/Not much/Mostly/Very much.

Class lists used to give pupils identification number in order to collate questionnaires for coding.

Lesson 2 – *Elements* flash cards and planning sheets given to pupils.
Preliminary group work to choose elements and begin graphic score
Lesson 3 – Rehearsal lesson – small group video and audio recordings made
Lesson 4 – Rehearsal and performances recorded.

Field Notes June 2007
School: XXX, Bolton
Year Group - Year 8 and 9
Topic: Year 8 – African music/Year 9 Song writing in Brit Pop style
Classes:

8c1 - AJM (Monday 1)
8c3 - JHD (Wednesday 3)
8b2 - AB (Wednesday 4)
8b6 - AB (Wednesday 5)

9c3 – (JHD) Monday 5
9c2 - (JHD) Wednesday 1
9b6 - (JHD) Friday 2
9b2 – (AJM) Friday 3

Appendix 5 Field Notes

Week 1: Year 8

Lesson 1 8c1 (teacher- AJM) 4.6.07 Period 1

- Starter – Listening: short extract of African music (5mins) with booklet.

Teacher led discussion

- Singing – call and response – syncopation explained
- Groupwork (15 mins) Groups of 5 -6 making up call and response patterns
- Performances (15 mins)
- Summary – Call and response, polyrhythm, African languages
- Completing ESFs

H/w – find out about three African instruments

Lesson 3 8c3 Period 3 Wednesday 6.6.07 (teacher JHD)

Similar format to 8c1
Starter – Clapping, passing rhythms around the class
Introduction – teacher exposition on Call and response. Class try out call and response using material in booklets. Attention drawn to dynamics, tempo and accents

Extracts of music played to show examples of call and response and to show call and response can be different- more like a question and answer ie leader to a group

Guided listening to extracts the point out rhythm, pulse and vocals
Booklet – pg 4 – cultural aspects/geography
Booklet – pg5 – examples of chants/pupils volunteer to be caller/leader
Class split into groups (2s,3s and 4s) to work on improvising own chants in African style (15 mins)
Plenary – recording of groups (10 mins) and completing ESFs

Lesson 1 8b6 Period 4/8c6 Period 5
Wednesday 6.6.07 (teacher – AB)

Same format as 8c3 and 8c1. AB starts with music extracts as a starter
Q and A session on features of the music

Teacher uses vocabulary associated with aspects of performance – harmony/unison/percussion/ostinato

Singing – uses chants fro the booklet.
Group activity – Creating own call and response improvisations

Plenary Performance to class and completing ESFs

Week 1: Year 9

Lesson 1 9c3 (Period 5 Monday 4.6.07)
9c2 (Period 1 Wednesday 6.6.07) Teacher – JHD

Starter: Words and phrases already written up on the board. Pupils to make up some sentences that use some of the words and phrases and write them down to pass on to a partner
Add a new sentence to the one already written – use only what's on the board and pass the paper back
Examples read out to the class

Part 1: Listening: pupils listen to song – teacher led discussion particularly in the choruses.

Part 2: Worksheets: used for planning and writing ideas for lyrics in the style of a Britpop song. Lyrics must tell a mundane everyday story – ie a feature of Britpop lyrics.
Chorus 4 lines/Verse 4 lines: doesn't necessarily need to rhyme
Pupils to work in 2s, 3s and 4s.
Penny lane by the Beatles playing in the background

Plenary – Examples of pupils' ideas read out to the rest of the class and completing ESFs
H/W Find out 10 facts about Britpop bands

Lesson 1 9b6 (Period 2 Friday 8.6.07) Teacher JHD

Slightly different format to other year 9 lessons as the class have already started some lyrics during the previous lesson.

Same starter as the other year 9 lessons – pupils worked in 2s, 3s and 4s.

Lesson 1 – 9b2 – (Period 3 Friday 8.6.07) teacher AJM

Slightly different format to first two lessons – printed sheet given to pupils for sentence starter – used Parklife by Blur

Teacher goes through lyrics with the class before they hear the song - fairly lengthy discussion (10 mins) about instrumentation.

Teacher puts more emphasis on lyrics prior to starting groupwork (in 5 or 6 and pupils chose who they wanted to work with.

Plenary – one person from each group read out their lyrics and completing ESFs

Week 2: Year 8

Monday (13.6.07) Period 1 8c1 Teacher AJM

Second lesson on African music – scheduled to be observed but Head of performing Arts did not come.
Starter – Pupils in 4 performing groups from the previous lesson
Pupils have an observation sheet for writing their comments about content and performance of each group.
Discussion - focus is on call and response

Second part of the lesson is on syncopation (Pg 10 of year 8 booklet)
Groups fro the previous lesson to begin composing/performing activity (5-10 mins)

Plenary – performances and completing ESFs

Wednesday (15.6.07) Period 3 8c3 JHD

Continuation of African topic/call and response
Clapping starter followed by teacher exposition on call and response to include key points from previous lesson (repetition/question and answer)

Whole class singing: 'The Lion Sleeps Tonight', incorporating melody/counter melody and ostinato bass line and more on call and response in the second song. Songs used as a basis for defining differences in rhythms ie using straight or syncopated beats
Main focus of the lesson still on syncopation (as AJM in lesson 2) but booklets not introduced until half way through the lesson
In pairs – pupils work out straight and syncopated patterns from page 10 in booklet and then work out some of their own.

Wednesday (15.6.07) Period 4 8b2 AB
Wednesday Period 5 8b6 AB

Starter: Singing Tue Tue Barima
Revision of call and response from previous lesson

Definition of Syncopation – syncopation means an unsteady movement from bar to bar. Song built up into two parts with instruments.

Main focus of the lesson follows same plan as the other year 8 sessions ie pg 10 of booklet; discussion and clapping of given examples – in threes pupils develop own patterns with a performance from each group to finish the lesson

Appendix 5 Field Notes

Week 2: Year 9

Monday Period 5 9c3 (11.6.07) JHD (very hot day)

Starter: Brief revision on Britpop and discussion of Britpop bands from H/W (Oasis, Blur and Pulp) Some discussion about hooks eg sax hooks in Parklife

Booklets issues and pupils' attention drawn to some elements/features of pop song writing

a. Blur – Intro/Vs/Chorus/Vs/Chorus structure
b. Beatles/Penny Lane – Instrumentation: piccolo/piano/firebell/ D trumpet

This leads on to talking about lyrics eg 4 -8 sentences/rhyming/pulse

10 minutes group work to start on lyrics

Wednesday Period 1 9c2 (13.6.07) JHD

Starter – Matching bands to decades using timeline sheet and ppt shown via network

Lesson also observer by head of music (for performance management)

Main part of lesson: Britpop booklets, listening and discussion on Parklife and Penny Lane.

Rest of lesson pupils worked on lyrics started during the previous lesson.

Friday Period 2 9b6 (15.6.07) JHD

Starter- reference to Britpop bands from 70s to the 90s (pg 5/6 of booklet)
Next part of lesson follows same plan as Monday 5

(some pupils away on exchange visits to France)

Friday Period 3 9b2 AJM

Song writing in Britpop style using ppt on network
Matching bands on timeline
Same musical extracts – Blur and Parklife/ Beatles and Penny Lane

Group work – to continue developing ideas from previous week for lyrics

Some pupils absent due to exchange trips to France

Year 8 Week 3

Monday 18.6.07 – Period 1 8c1 AJM

Lesson cancelled

Wednesday 20.6.07 Period 3 JHD

Recap of songs from previous lesson – songs used as models for group compositions. Some time spent working in pairs.
Group chosen for small group video

Isobel Stokes
Elizabeth Hill
Sarah Longworth
Teacher models one of the topics at the end of the lesson (Celebration, Healing, War, Work)

Wednesday 20.6.07 Period 4 8b2
First part of the lesson – teacher gives a brief overview about instruments (the ones in the African basket) and some background to the task. Less that intended to give more time for group work and performances

Good lesson with some excellent performances at the end –

Wednesday 20.6.07 Period 5 8b6

Same format as Period 4 although this class were not as focused as 8b2.
Small group for video –
Tom
Lewis
Jordan

N.B. Decided to use the video from this week for the study and not continue into week 4 for 8b2 and 8b6

Appendix 5 Field Notes

Week 4 Year 8

Monday 25.6.08 Period 1 8c1 AJM

African Music – Planning sheet

Pupils divided into small groups ton[plan compositions – some are also involved in rehearsals for a concert later on the same day

Small group

Natasha
Lee
Eleanor
Lucy
Lewis
Thomas

Wednesday 27.6.07 Period 3 8c3 JHD

Teacher introduction – reminder about the topics and ideas discussed in previous lesson

Rest of lesson – small group work

Week 3 Year 9

Monday 18.6.07 Period 5 9c3 JHD

Starter – round the class – each person name a Britpop band
Discussion and the background to Britpop
Pg 2 of Booklet – putting lyrics to the music
Groupwork – First task: check out ability to use autochord as well as the other keyboard functions

Pupils chosen for small group video
Jade
Emma
Lucy
Miriam

Wednesday 20.6.07 Period 1 9c2 JHD
Lesson cancelled – interform rounders competition

Friday 22.6.07 Period 2 9b6 JHD

Page 2 of booklet – recap on chords
(C F G Am Em Cm Dm) - Teacher's introduction – Use of chords and autochord function

Small group
Adam
Anthony
Ryan
Stephen
Joseph

Small group working together on chord sequences and styles prior to deciding what they will use for heir lyrics

Plenary – groups play what they have so far to the rest of the class

Friday 22.6.07 Period 3 9b2 AJM

Slightly different starter – Listening to track by Oasis (Extract 3 on Booklet)
Following starter pupils spend about 10 minutes reminding themselves about lyrics from previous lesson.

After some more discussion with the teacher, groups work on chord progressions to go with their lyrics. Groups worked together for the rest of the lesson.

Week 4 Year 9

Monday 25.6.08 Period 5 9c3 JHD

Recap from last lesson on autochord
Pupils shown how to complete chords and lyrics and how this should be written down in their booklet
Rest of lesson – small group work

Chosen group
Jade
Lucy
Emma

Wednesday 27.6.07 Period 1 9c2 JHD

Teacher exposition – similar to 9b6 lesson 22.6.07 – use of autochord
Small group working together to work out chord sequences and styles prior to fitting the backing with the lyrics

Friday 29.6.07 Period 2 9b6 JHD

Picked up from previous lesson – working in groups

Appendix 6 Teacher Assessment

Guidance for Teacher Assessment

Year 7 The Elements

Level 3*: at least one element can be identified and players are keeping time with each other

Level 4: as level 3 + three clear and balanced sections

Level 5: all of level 3 and 4 + a range of melodic and rhythmic ostinati

*Pupils also produced a graphic score which is not required for this assessment but was assessed at the time.

Year 8 African Music: 'I Got Rhythm'

Level 4c: Improvisation of music which combines two parts performed in call and response style with an ostinato accompaniment.

Level 4b: as level 4c + an additional call and response pattern

Level 4a: as level 4b with two or more call and response patterns and more than one accompanying ostinato.

Level 5c: as level 4a + an introduction and ending

Level 5b: as level 5c + more complex melodic and rhythmic ostinati and call and response patterns

Year 9 Song Writing in Britpop Style

Level 4: music shows that pupils have understood the basic ideas associated with the genre and their performance reflects awareness of how the parts fit together

Level 5: as level 4 + music shows more in-depth understanding of Britpop style as shown in the lyrics, melody, use of chords and overall song structure (verse and/or chorus)

Level 6: as level 4 and 5 + inclusion of harmonic/non-harmonic devices (ie rhythm/use of keyboard and the addition of other instruments) together with appropriate use of tempo, dynamics, phrasing and timbre. Adjustments are made to fit parts together successfully.

Level 7: as level 4, 5 and 6 + music shows they have considered the features of Britpop style and adapted, improvised, developed and extended their musical ideas to produce a convincing performance.

Appendix 6 Teacher Assessment

Results of Teacher Assessment

N.C Levels

Class (CD Order)	Group N.C Level 3	Group N.C Level 4	Group N.C Level 5	Group N.C Level 6	Group N.C Level 7
7L	* * * *				
7T		* *	* *		
7E		*	* * *		
7N	* * *	*			
8b2		4c, 4c, 4c	5c	*	
8c1		4a, 4b, 4b	5b,	*	
8c3		4b, 4c, 4b, 4b	#		
8b6		4b	5b, 5b, 5c, *		
9b2		* *	* * *		
9c2		* *	*	*	*
9c3				* * * * *	
9b6			* * * *		*

(Some of the extracts are very short so please focus on the quality of the music and the performance)

*** Indicates where teacher awarded a level without an additional letter**

Groups where four teachers were in agreement:

7L: Level 3
8c3: Level 4 (4bx3 and 4cx1)
9c2: Level 6
9b6: Level 5

Groups where three teachers were in agreement:

7E: Level 5
7N: Level 3
8b2: Level 4 (4c)
8c1: Level 4 (4a x1, 4b x2)
8c6: Level 5 (5c x1, 5b x 2)

Groups where two teachers where in agreement:

7T: Level 4/ Level 5
9b2: Level 4/Level 5
9c2: Level 4/ Level 5 (1) and level 7 (1)

Groups with highest rating in each year group

7E – Level 5
8c6 – Level 5 (three teachers)
9c3 – Level 6 – (four teachers)

Comments Table

Class (CD Order)	Please include levels originally given to individual pupils if known
7L	
7T	
7E	
7N	
8b2	
8c1	
8c3	
8c6	
9b2	
9c2	
9c3	
9b6	

Appendix 6 Teacher Responses to Assessment

Teacher Assessment

Please complete the N.C table to give your assessment levels and add any additional notes in the comments table.

N.C Levels*

Class (CD Order)	Group N.C Level 3	Group N.C Level 4	Group N.C Level 5	Group N.C Level 6	Group N.C Level 7
7L	✓				
7T		✓			
7E			✓		
7N	✓				
8b2		✓ 4C			
8c1		✓ 4B			
8c3		✓ 4B			
8c6		✓ 5B			
9b2			✓		
9c2		✓			
9c3				✓	
9b6			✓		

*** Some of the extracts are very short so please focus on the quality of the music and the performance**

Comments Table

Class (CD Order)	Please include levels originally given to individual pupils if known
7L	Sections not very clear.
7T	Three clearly balanced sections. Good ostinati. Flautist more able than others.
7E	Lots of interesting layers and clear sections. Good melodic ostinati. Very much together. Develops well.
7N	Good rhythmic ostinati & repeated idea throughout but didn't have 3 clear sections more C+A form
8b2	4C: no addition call + response pattern good vocals.
8c1	4b: good vocal line + harmony
8c3	4b: Good ideas but very short needs to develop ideas
8c6	5b: Clear ostinati complex rhythm patterns (on wording of level descriptors)
9b2	L5: Good strong structure.
9c2	L4: Some chord structure evident but not as clear.
9c3	L6: Good use of keyboard devices + harmonic structure. Good melodic line
9b6	L5. Clear chord structure defined. Lyrics fit to melody well.

Appendix 6 Teacher Responses to Assessment

Teacher Assessment

Please complete the N.C table to give your assessment levels and add any additional notes in the comments table.

N.C Levels*

Class (CD Order)	Group N.C Level 3	Group N.C Level 4	Group N.C Level 5	Group N.C Level 6	Group N.C Level 7
7L	✓				
7T		✓			
7E			✓		
7N		✓			
8b2			5C		
8c1			5B		
8c3		4C			
8c6			5C		
9b2		✓			
9c2					✓
9c3				✓	
9b6			✓		

*** Some of the extracts are very short so please focus on the quality of the music and the performance**

Comments Table

Class (CD Order)	Please include levels originally given to individual pupils if known
7L	Players playing mainly separately
7T	3 clear sections.
7E	Range of melodic and rhythmic ostinato. "Only [illegible] [illegible] in the middle."
7N	Range of ostinati. Different sections. Not in time always, apart from lead singer
8b2	At least 3 call/response patterns. Intro and ending.
8c1	Short but perfectly formed! Intro. Singing solo, then in thirds and a [illegible] to end. In time. Most musical!
8c3	Excellent varied ostinati, melodic and rhythmic. Jazz and call/response however little [illegible] would greatly [illegible]
8c6	Excellent varied ostinati. Intro and ending. Non-vocal call/response from instruments??
9b2	Intro. Vocals in time. More vocals [illegible]. Verse/chorus [illegible].
9c2	Verse only. Very accomplished. Harmony sung in thirds. Effective 'ska' rhythm. Great potential!
9c3	Intro. Verse/Chorus. [illegible] but [illegible] vocals in time. Good sense of [illegible] and chorus. [illegible]
9b6	Great potential. Very short. Teacher intervened completely so most players played in time.

J. Leach

Appendix 6 Teacher Responses to Assessment

Composing in the Classroom

	Group	Level	Comments
Year 7 The Elements			
Track 1	7L	3	
Track 2	7T	4	
Track 3	7E	4	
Track 4	7N	3	
Year 8 African Music: 'I Got Rhythm'			
Track 5	8b2	4c	
Track 6	8c1	4b	only one call and response but good harmony and good ensemble
Track 7	8c3	4b	Again only one call and response, but good rhythm and melody. Would have been a higher level if not so short.
Track 8	8c6	4c	
Year 9 Song Writing in Britpop style			
Track 9	9b2	4	
Track 10	9c2	5	
Track 11	9c3	6	
Track 12	9b2	5	

Appendix 6 Teacher Responses to Assessment

Teacher Assessment

Please complete the N.C table to give your assessment levels and add any additional notes in the comments table.

N.C Levels*

Class (CD Order)	Group N.C Level 3	Group N.C Level 4	Group N.C Level 5	Group N.C Level 6	Group N.C Level 7
7L	✓				
7T			✓		
7E			✓		
7N	✓				
8b2		4c			
8c1		4a			
8c3		4b			
8c6		5b			
9b2			✓		
9c2		✓			
9c3				✓	
9b6			✓		

*** Some of the extracts are very short so please focus on the quality of the music and the performance**

Comments Table

Class (CD Order)	Please include levels originally given to individual pupils if known
7L	No Clear Structure.
7T	Good use of rhythmic/melodic ideas/structure. Shows development of
7E	Interesting use of texture. Effective Simple ostinato ideas shared between the performers.
7N	Good use of melodic idea at the beginning and they successfully developed this, however no clear structure.
9b2	Effective Call + Response patter but could have been developed.
8c1	Good Harmony
8c3	Good introduction
8c6	Great Syncopated patterns. Complex.
9b2	Good/weak clear verse/chorus structure
9c2	Not as well structured / not as appropriate style.
9c3	Good use of keyboard devices / good melodic line
9b6	Good use Chords on the guitar

AJM

Appendix 6 Teacher Responses to Assessment

Please complete the N.C table to give your assessment levels and add any additional notes in the comments table.

N.C Levels*

Class (CD Order)	Group N.C Level 3	Group N.C Level 4	Group N.C Level 5	Group N.C Level 6	Group N.C Level 7
7L					
7T					
7E					
7N					
8b2				✓	
8c1				✓	
8c3			✓		
8c6			✓		
9b2			✓		
9c2				✓	
9c3					
9b6					✓

*** Some of the extracts are very short so please focus on the quality of the music and the performance**

Comments Table

Class (CD Order)	Please include levels originally given to individual pupils if known
7L	
7T	
7E	
7N	
8b2 AB	Melissa Barry 6b. Lemon Wright 6a. Laura Fleck 5a. Sarah Edmondson 6c.
8c1 AJM	Eleanor - 6c, Tom Smith 6c,
8c3 JHD	5b - Elizabeth Hill 5c + Vanessa Virgo 5b + Isobel Stokes Sarah Longworth - 5b
8b6 AB	Jackson Dickie 6c. Tom Johnson 5b Lewis Holland 5b.
9b2 AJM	Andrew 6c, Hayley 5b; Catherine 5b, Mike 6c, James 5b
9c2 JHD	Helen Mitchell - 6b Sophie Wilcock - 6c
9c3 JHD	Lucy Ashton - 5a Jade Birches - 6c Miriam Davies - 6c
9b6 JHD	Anthony Mann - 7a Adam Knight - 7b Stephen Roebuck - 6b

[L]evels here are the end of unit marks once songs + compositions [w]ere finished.

Appendix 7
SPSS Output for Factor Analysis for ESF 1

ESF 1 Factor Analysis: In Flow (15 or more): Activity Related variables

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.841	32.004	32.004	3.841	32.004	32.004	2.955	24.623	24.623
2	2.200	18.335	50.339	2.200	18.335	50.339	2.527	21.054	45.677
3	1.961	16.343	66.682	1.961	16.343	66.682	1.926	16.051	61.729
4	1.184	9.865	76.547	1.184	9.865	76.547	1.778	14.818	76.547
5	.839	6.993	83.540						
6	.519	4.327	87.867						
7	.412	3.434	91.300						
8	.373	3.108	94.408						
9	.244	2.033	96.441						
10	.233	1.939	98.380						
11	.139	1.155	99.535						
12	.056	.465	100.000						

Extraction Method: Principal Component Analysis.

Appendix 7
SPSS Output for Factor Analysis for ESF 1

Rotated Component Matrix[a]

	Component			
	1	2	3	4
AR ENJOY	.874	-.084	-.101	.328
AR IMPY	.837	.129	.058	-.014
AR CONCEN	.619	.119	.357	-.027
AR INTEREST	.615	.502	.080	.420
AR EXPO	-.018	.906	.171	.036
AR ABILITY	-.015	.896	.054	.226
AR SUCCESS	.340	.750	-.126	-.292
AR GOOD	.146	-.138	-.873	.076
AR CONTROL	.418	.009	.658	.160
AR EXPY	.512	-.007	.544	-.210
AR INVOLVE	-.105	.168	-.407	.815
AR WISHDOE	-.381	.058	-.272	-.785

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Appendix 7
SPSS Output for Factor Analysis for ESF 1

Component Transformation Matrix

Component	1	2	3	4
1	.774	.462	.345	.261
2	-.378	.832	-.379	.147
3	.210	-.304	-.601	.709
4	.463	.043	-.614	-.638

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

ESF 1 Flow In Flow (15 or more): Social and Talk Related Variables

Communalities

	Initial	Extraction
Express your opinions?	1.000	.754
Others really listening to you?	1.000	.846
Care about what others say?	1.000	.334

Extraction Method: Principal Component Analysis.

Appendix 7
SPSS Output for Factor Analysis for ESF 1

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.934	64.466	64.466	1.934	64.466	64.466
2	.823	27.445	91.911			
3	.243	8.089	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Others really listening to you?	.920
Express your opinions?	.868
Care about what others say?	.578

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Rotated Component Matrix[a]

a. Only one component was extracted. The solution cannot be rotated.

Factor Analysis PFlow (Flow 9-14): Activity Related variables

Communalities

	Initial	Extraction
AR ENJOY	1.000	.599
AR INTEREST	1.000	.656
AR CONCEN	1.000	.611
AR EXPO	1.000	.656
AR CONTROL	1.000	.532
AR INVOLVE	1.000	.687
AR ABILITY	1.000	.502
AR IMPY	1.000	.545
AR EXPY	1.000	.517
AR SUCCESS	1.000	.700
AR WISHDOE	1.000	.508
AR GOOD	1.000	.611

Extraction Method: Principal Component Analysis.

Appendix 7
SPSS Output for Factor Analysis for ESF 1

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.429	36.904	36.904	4.429	36.904	36.904	2.777	23.142	23.142
2	1.539	12.828	49.732	1.539	12.828	49.732	2.627	21.891	45.033
3	1.156	9.634	59.366	1.156	9.634	59.366	1.720	14.333	59.366
4	.905	7.540	66.906						
5	.820	6.830	73.736						
6	.671	5.590	79.326						
7	.614	5.118	84.443						
8	.491	4.095	88.538						
9	.426	3.547	92.085						
10	.352	2.934	95.019						
11	.316	2.634	97.653						
12	.282	2.347	100.000						

Extraction Method: Principal Component Analysis.

Appendix 7
SPSS Output for Factor Analysis for ESF 1

Component Matrix[a]

	Component		
	1	2	3
AR EXPO	.724	.347	-.110
AR CONCEN	.710	.326	.019
AR INTEREST	.688	-.369	-.215
AR ABILITY	.683	-.014	-.188
AR INVOLVE	.657	-.156	-.480
AR ENJOY	.649	-.421	-.015
AR CONTROL	.620	.295	-.246
AR SUCCESS	.590	.558	.202
AR GOOD	.518	.319	.491
AR IMPY	.476	-.308	.473
AR WISHDOE	-.474	.531	-.042
AR EXPY	.395	-.312	.513

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Appendix 7
SPSS Output for Factor Analysis for ESF 1

Component Transformation Matrix

Component	1	2	3
1	.656	.651	.382
2	.744	-.473	-.472
3	.126	-.594	.795

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Rotated Component Matrix[a]

	Component		
	1	2	3
AR SUCCESS	.828	-.001	.123
AR EXPO	.719	.372	.025
AR CONCEN	.711	.297	.133
AR GOOD	.639	-.106	.438
AR CONTROL	.596	.410	-.097
AR INVOLVE	.255	.786	-.057
AR INTEREST	.150	.750	.266
AR ENJOY	.111	.631	.435
AR ABILITY	.413	.563	.118
AR WISHDOE	.079	-.534	-.465
AR EXPY	.091	.100	.706
AR IMPY	.143	.175	.703

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 11 iterations.

ESF 1 Factor Analysis PFlow (Flow 9-14): Social and Talk related variables

Communalities

	Initial	Extraction
Express your opinions?	1.000	.645
Others really listening to you?	1.000	.628
Care about what others say?	1.000	.644

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.916	63.862	63.862	1.916	63.862	63.862
2	.554	18.463	82.326			
3	.530	17.674	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Express your opinions?	.803
Care about what others say?	.802
Others really listening to you?	.792

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Rotated Component Matrix[a]

a. Only one component was extracted. The solution cannot be rotated.

Factor Analysis No Flow (8 or less): Activity Related variables

Communalities

	Initial	Extraction
AR ENJOY	1.000	.881
AR INTEREST	1.000	.763
AR CONCEN	1.000	.657
AR EXPO	1.000	.589
AR CONTROL	1.000	.729
AR INVOLVE	1.000	.512
AR ABILITY	1.000	.633
AR IMPY	1.000	.718
AR EXPY	1.000	.797
AR SUCCESS	1.000	.400
AR WISHDOE	1.000	.705
AR GOOD	1.000	.584

xtraction Method: Principal Component Analysis.

Appendix 7
SPSS Output for Factor Analysis for ESF 1

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.441	45.345	45.345	5.441	45.345	45.345	2.819	23.489	23.489
2	1.439	11.988	57.333	1.439	11.988	57.333	2.684	22.370	45.860
3	1.088	9.067	66.400	1.088	9.067	66.400	2.465	20.541	66.400
4	.798	6.647	73.047						
5	.699	5.828	78.875						
6	.619	5.157	84.032						
7	.501	4.175	88.206						
8	.436	3.636	91.842						
9	.361	3.005	94.847						
10	.273	2.272	97.119						
11	.245	2.042	99.161						
12	.101	.839	100.000						

Extraction Method: Principal Component Analysis.

Appendix 7
SPSS Output for Factor Analysis for ESF 1

Component Matrix[a]

	Component		
	1	2	3
AR INTEREST	.843	-.207	.098
AR ENJOY	.831	-.414	.141
AR CONTROL	.806	.269	-.084
AR ABILITY	.743	.122	-.257
AR GOOD	.710	.277	-.047
AR INVOLVE	.703	.085	.100
AR EXPO	.666	.380	.040
AR WISHDOE	-.610	.577	.023
AR SUCCESS	.496	.196	.339
AR IMPY	.481	-.624	-.313
AR EXPY	.522	.364	-.626
AR CONCEN	.525	.126	.605

Extraction Method: Principal Component Analysis

Appendix 7
SPSS Output for Factor Analysis for ESF 1

Rotated Component Matrix[a]

	Component		
	1	2	3
AR EXPY	.882	.077	-.112
AR CONTROL	.683	.242	.451
AR ABILITY	.673	.349	.242
AR GOOD	.607	.177	.429
AR EXPO	.580	.056	.499
AR IMPY	.160	.821	-.136
AR WISHDOE	-.090	-.816	-.176
AR ENJOY	.211	.785	.470
AR INTEREST	.351	.628	.496
AR CONCEN	.025	.110	.803
AR SUCCESS	.203	.072	.595
AR INVOLVE	.415	.311	.493

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Component Transformation Matrix

Component	1	2	3
1	.613	.559	.558
2	.516	-.818	.253
3	-.598	-.133	.791

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

ESF 1 No Flow (8 or less): Social and Talk related variables

Communalities

	Initial	Extraction
Express your opinions?	1.000	.544
Others really listening to you?	1.000	.696
Care about what others say?	1.000	.495

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.734	57.796	57.796	1.734	57.796	57.796
2	.759	25.302	83.099			
3	.507	16.901	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Others really listening to you?	.834
Express your opinions?	.737
Care about what others say?	.703

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Rotated Component Matrix[a]

a. Only one component was extracted. The solution cannot be rotated.

ESF 2 Factor Analysis In Flow (Flow 15 or more): Activity Related variables

Communalities

	Initial	Extraction
AR ENJOY	1.000	.905
AR INTEREST	1.000	.875
AR CONCEN	1.000	.538
AR EXPO	1.000	.570
AR CONTROL	1.000	.887
AR INVOLVE	1.000	.879
AR ABILITY	1.000	.903
AR IMPY	1.000	.796
AR EXPY	1.000	.634
AR SUCCESS	1.000	.738
AR WISHDOE	1.000	.562
AR GOOD	1.000	.808

Extraction Method: Principal Component Analysis.

Appendix 7
SPSS Output for Factor Analysis for ESF 2

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	6.000	50.001	
2	1.984	16.533	
3	1.108	9.232	
4	.939	7.827	83.593
5	.548	4.567	88.160
6	.542	4.519	92.680
7	.256	2.134	94.814
8	.189	1.576	96.390
9	.159	1.322	97.713
10	.131	1.092	98.805
11	.083	.689	99.494
12	.061	.506	100.000

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	50.001	6.000	50.001	50.001
2	66.535	1.984	16.533	66.535
3	75.766	1.108	9.232	75.766

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.974	33.114	33.114
2	2.721	22.673	55.788
3	2.397	19.979	75.766

Extraction Method: Principal Component Analysis.

Appendix 7
SPSS Output for Factor Analysis for ESF 2

Component Matrix[a]

	Component		
	1	2	3
AR ENJOY	.935	-.125	.119
AR INTEREST	.916	-.092	.168
AR CONTROL	.906	-.251	-.061
AR INVOLVE	.831	-.319	.293
AR ABILITY	.817	-.159	.459
AR IMPY	.816	-.027	-.359
AR EXPY	.689	-.131	-.377
AR WISHDOE	-.593	.131	.439
AR GOOD	.377	.719	.386
AR EXPO	.336	.657	.156
AR SUCCESS	.508	.633	-.281
AR CONCEN	.322	.621	-.221

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Rotated Component Matrix[a]

	Component		
	1	2	3
AR ABILITY	.932	.117	.145
AR INVOLVE	.894	.281	-.013
AR INTEREST	.817	.399	.220
AR ENJOY	.813	.455	.191
AR CONTROL	.723	.601	.051
AR IMPY	.415	.760	.213
AR EXPY	.339	.717	.073
AR WISHDOE	-.231	-.712	-.038
AR GOOD	.294	-.195	.826
AR SUCCESS	.030	.431	.742
AR EXPO	.148	-.024	.740
AR CONCEN	-.072	.278	.675

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Factor Analysis PFlow (Flow 9-14): Activity related variables

Communalities

	Initial	Extraction
AR ENJOY	1.000	.649
AR CONCEN	1.000	.704
AR INTEREST	1.000	.762
AR EXPO	1.000	.722
AR CONTROL	1.000	.622
AR INVOLVE	1.000	.743
AR ABILITY	1.000	.725
AR IMPY	1.000	.704
AR EXPY	1.000	.674
AR SUCCESS	1.000	.633
AR WISHDOE	1.000	.679
AR GOOD	1.000	.573

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	6.011	50.090	
2	1.159	9.657	
3	1.022	8.515	
4	.750	6.251	74.512
5	.611	5.094	79.605
6	.589	4.905	84.510
7	.457	3.805	88.315
8	.401	3.344	91.660
9	.356	2.964	94.623
10	.265	2.212	96.835
11	.222	1.848	98.683
12	.158	1.317	100.000

Extraction Method: Principal Component Analysis.

Appendix 7
SPSS Output for Factor Analysis for ESF 2

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	50.090	6.011	50.090	50.090
2	59.746	1.159	9.657	59.746
3	68.261	1.022	8.515	68.261

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	2.832	23.603	23.603
2	2.765	23.045	46.649
3	2.593	21.612	68.261

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component		
	1	2	3
AR EXPO	.761	.096	.366
AR INTEREST	.752	-.426	-.126
AR SUCCESS	.743	.267	.096
AR CONCEN	.728	-.153	.388
AR GOOD	.726	.012	-.215
AR CONTROL	.718	.324	.029
AR IMPY	.717	-.431	.063
AR ABILITY	.708	.443	-.168
AR EXPY	.690	-.042	.442
AR ENJOY	.690	-.370	-.187
AR INVOLVE	.678	.456	-.273
AR WISHDOE	-.560	.199	.572

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Appendix 7
SPSS Output for Factor Analysis for ESF 2

Rotated Component Matrix[a]

	Component		
	1	2	3
AR INVOLVE	.824	.115	.227
AR ABILITY	.800	.218	.195
AR CONTROL	.658	.399	.173
AR SUCCESS	.611	.475	.187
AR EXPY	.244	.765	.172
AR CONCEN	.200	.761	.292
AR EXPO	.412	.725	.162
AR INTEREST	.160	.408	.755
AR WISHDOE	-.349	.092	-.741
AR ENJOY	.184	.316	.718
AR IMPY	.080	.539	.638
AR GOOD	.500	.256	.507

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

Component Transformation Matrix

Component	1	2	3
1	.589	.591	.551
2	.752	-.152	-.642
3	-.296	.793	-.533

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

ESF2 Factor Analysis No Flow (8 or less)

Communalities

	Initial	Extraction
AR ENJOY	1.000	.750
AR CONCEN	1.000	.676
AR INTEREST	1.000	.807
AR EXPO	1.000	.623
AR CONTROL	1.000	.635
AR INVOLVE	1.000	.710
AR ABILITY	1.000	.719
AR IMPY	1.000	.554
AR EXPY	1.000	.632
AR SUCCESS	1.000	.699
AR WISHDOE	1.000	.815
AR GOOD	1.000	.699

Extraction Method: Principal Component Analysis.

Component	1	2	3
1	.755	.571	.322
2	-.300	-.137	.944
3	.583	-.809	.068

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Appendix 7
SPSS Output for Factor Analysis for ESF 2

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	5.739	47.827	
2	1.431	11.929	
3	1.147	9.557	
4	.759	6.329	75.643
5	.626	5.214	80.856
6	.548	4.570	85.427
7	.452	3.768	89.195
8	.393	3.272	92.467
9	.309	2.572	95.039
10	.247	2.060	97.099
11	.192	1.597	98.697
12	.156	1.303	100.000

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	47.827	5.739	47.827	47.827
2	59.756	1.431	11.929	59.756
3	69.313	1.147	9.557	69.313

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.601	30.010	30.010
2	2.797	23.309	53.319
3	1.919	15.994	69.313

Extraction Method: Principal Component Analysis.

Appendix 7
SPSS Output for Factor Analysis for ESF 2

Component Matrix[a]

	Component		
	1	2	3
AR INTEREST	.821	-.287	-.225
AR ABILITY	.807	.221	-.135
AR CONCEN	.803	-.095	.149
AR SUCCESS	.793	.255	.079
AR CONTROL	.782	.087	-.126
AR ENJOY	.705	-.036	-.501
AR IMPY	.702	-.247	-.015
AR EXPO	.686	.092	.379
AR GOOD	.651	-.275	.447
AR EXPY	.639	.210	.424
AR WISHDOE	-.240	.835	.244
AR INVOLVE	.424	.575	-.446

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Rotated Component Matrix[a]

	Component		
	1	2	3
AR GOOD	.769	-.041	.326
AR EXPY	.764	.194	-.099
AR EXPO	.763	.196	.036
AR CONCEN	.684	.329	.315
AR SUCCESS	.644	.533	.024
AR IMPY	.493	.307	.466
AR INVOLVE	.031	.813	-.220
AR ENJOY	.173	.729	.435
AR ABILITY	.508	.667	.127
AR CONTROL	.489	.584	.234
AR WISHDOE	.026	.088	-.898
AR INTEREST	.435	.497	.609

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Appendix 7
SPSS Output for Factor Analysis for ESF 2

Component Transformation Matrix

Component	1	2	3
1	.731	.588	.346
2	.042	.467	-.883
3	.681	-.660	-.317

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

ESF 2 Factor Analysis In Flow (Flow = 15 or more): Social and Talk Related Variables

Communalities

	Initial	Extraction
Express your opinions?	1.000	.852
Others really listening to you?	1.000	.804
Care about what others say?	1.000	.161

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Express your opinions?	.923
Others really listening to you?	.897
Care about what others say?	.401

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.816	60.546	60.546	1.816	60.546	60.546
2	.929	30.951	91.497			
3	.255	8.503	100.000			

Extraction Method: Principal Component Analysis.

ESF 2 Factor Analysis PFlow (Flow 9-14): Social and Talk Related Variables

Communalities

	Initial	Extraction
Express your opinions?	1.000	.594
Others really listening to you?	1.000	.708
Care about what others say?	1.000	.626

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.816	60.546	60.546	1.816	60.546	60.546
2	.929	30.951	91.497			
3	.255	8.503	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Express your opinions?	.923
Others really listening to you?	.897
Care about what others say?	.401

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

ESF 2 Factor Analysis No Flow (Flow = 8 or less): Social and Talk Related Variables

Communalities

	Initial	Extraction
Express your opinions?	1.000	.824
Others really listening to you?	1.000	.834
Care about what others say?	1.000	.535

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Others really listening to you?	.913
Express your opinions?	.908
Care about what others say?	.731

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.193	73.096	73.096	2.193	73.096	73.096
2	.616	20.518	93.613			
3	.192	6.387	100.000			

Extraction Method: Principal Component Analysis.

Factor Analysis ESF 3 and 4 Most Flow (15 or more): AR Variables

Communalities

	Initial	Extraction
AR ENJOY	1.000	.708
AR INTEREST	1.000	.669
AR CONCEN	1.000	.742
AR EXPO	1.000	.777
AR CONTROL	1.000	.638
AR INVOLVE	1.000	.674
AR ABILITY	1.000	.574
AR IMPY	1.000	.353
AR EXPY	1.000	.741
AR SUCCESS	1.000	.317
AR WISHDOE	1.000	.542
AR GOOD	1.000	.500

Extraction Method: Principal Component Analysis.

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	5.884	49.031	
2	1.352	11.264	
3	.965	8.041	68.336
4	.923	7.696	76.032
5	.688	5.736	81.769
6	.564	4.701	86.470
7	.532	4.437	90.907
8	.323	2.691	93.598
9	.278	2.318	95.915
10	.206	1.718	97.634
11	.168	1.400	99.033
12	.116	.967	100.000

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	5.337	44.478	44.478
2	1.898	15.817	60.295

Extraction Method: Principal Component Analysis.

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	49.031	5.884	49.031	49.031
2	60.295	1.352	11.264	60.295

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component	
	1	2
AR CONCEN	.827	.241
AR EXPO	.823	.317
AR CONTROL	.794	-.090
AR ABILITY	.752	.089
AR ENJOY	.750	.381
AR INVOLVE	.730	.376
AR INTEREST	.729	.372
AR EXPY	.690	-.515
AR SUCCESS	.522	.210
AR IMPY	.520	.289
AR WISHDOE	-.092	-.731
AR GOOD	.358	.610

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

	Component	
	1	2
AR EXPO	.881	-.011
AR CONCEN	.859	.061
AR ENJOY	.836	-.097
AR INVOLVE	.815	-.099
AR INTEREST	.813	-.096
AR ABILITY	.736	.178
AR CONTROL	.713	.360
AR IMPY	.587	-.090
AR SUCCESS	.563	-.016
AR GOOD	.548	-.448
AR EXPY	.468	.723
AR WISHDOE	-.340	.653

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Component Transformation Matrix

Component	1	2
1	.938	.347
2	.347	-.938

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Factor Analysis ESF 3 and 4 Most Flow (15 or more):
MR Variables

Communalities

	Initial	Extraction
MR HAPPY/SAD	1.000	.749
MR WEAK/STRONG	1.000	.779
MR OPEN/CLOSED	1.000	.700
MR ACTIVE/STILL	1.000	.596
MR CHEERFUL/IRRITATED	1.000	.876
MR INVOLVED/UNINVOLVED	1.000	.708
MR EXCITED/BORED	1.000	.755
MR LONELY/IN A GROUP	1.000	.697
MR ALERT/SLEEPY	1.000	.678
MR RELAXED/UPTIGHT	1.000	.681
MR PROUD/ASHAMED	1.000	.737
MR CLEAR/CONFUSED	1.000	.420
MR COOPERATIVE/COMETITIVE	1.000	.590

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	6.292	48.397	
2	1.672	12.862	
3	1.003	7.712	
4	.900	6.926	75.897
5	.672	5.166	81.064
6	.637	4.899	85.963
7	.518	3.986	89.949
8	.427	3.288	93.237
9	.301	2.317	95.554
10	.235	1.809	97.363
11	.199	1.533	98.895
12	.083	.642	99.537
13	.060	.463	100.000

Extraction Method: Principal Component Analysis.

ESF 3 and 4 Most Flow Factor Analysis SPSS All Output

Total Variance Explained

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	48.397	6.292	48.397	48.397
2	61.260	1.672	12.862	61.260
3	68.971	1.003	7.712	68.971

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	4.578	35.216	35.216
2	2.627	20.210	55.426
3	1.761	13.545	68.971

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component		
	1	2	3
MR CHEERFUL/IRRITATED	.920	.102	-.138
MR PROUD/ASHAMED	.837	.069	-.177
MR OPEN/CLOSED	.827	-.118	.055
MR EXCITED/BORED	.807	.093	-.309
MR INVOLVED/UNINVOLVED	.797	.235	-.131
MR ACTIVE/STILL	.751	-.072	-.162
MR ALERT/SLEEPY	.736	-.155	-.334
MR HAPPY/SAD	.690	-.133	.506
MR RELAXED/UPTIGHT	.659	-.090	.488
MR CLEAR/CONFUSED	.579	.242	.162
MR COOPERATIVE/COMETITIVE	.565	.381	.354
MR WEAK/STRONG	-.161	.850	-.174
MR LONELY/IN A GROUP	-.280	.773	.147

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

ESF 3 and 4 Most Flow Factor Analysis SPSS All Output

Rotated Component Matrix[a]

	Component		
	1	2	3
MR EXCITED/BORED	.846	.200	-.010
MR CHEERFUL/IRRITATED	.843	.406	-.022
MR PROUD/ASHAMED	.794	.324	-.043
MR ALERT/SLEEPY	.778	.114	-.245
MR INVOLVED/UNINVOLVED	.751	.357	.126
MR ACTIVE/STILL	.701	.274	-.170
MR OPEN/CLOSED	.637	.490	-.234
MR HAPPY/SAD	.270	.785	-.244
MR RELAXED/UPTIGHT	.258	.758	-.197
MR COOPERATIVE/COMETITIVE	.301	.645	.287
MR CLEAR/CONFUSED	.408	.480	.154
MR WEAK/STRONG	.048	-.143	.870
MR LONELY/IN A GROUP	-.238	.049	.799

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization

a. Rotation converged in 5 iterations.

Component Transformation Matrix

Component	1	2	3
1	.821	.553	-.139
2	.097	.106	.990
3	-.562	.826	-.033

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization

Factor Analysis ESF 3 and 4 Most Flow (15 or more): S and T Variables

Communalities

	Initial	Extraction
Express your opinions?	1.000	.786
Others really listening to you?	1.000	.729
Care about what others say?	1.000	.339

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	1.855	61.818	
2	.816	27.202	89.020
3	.329	10.980	100.000

Extraction Method: Principal Component Analysis.

ESF 3 and 4 Most Flow Factor Analysis SPSS All Output

Total Variance Explained

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	61.818	1.855	61.818	61.818

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Express your opinions?	.887
Others really listening to you?	.854
Care about what others say?	.582

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Factor Analysis ESF 3 and 4 PFlow (9-14): AR Variables

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	7.350	61.247	
2	.952	7.935	69.183
3	.722	6.020	75.203
4	.626	5.213	80.416
5	.506	4.217	84.633
6	.386	3.219	87.853
7	.330	2.749	90.601
8	.318	2.649	93.251
9	.271	2.259	95.509
10	.247	2.062	97.572
11	.200	1.667	99.239
12	.091	.761	100.000

Extraction Method: Principal Component Analysis.

	Initial	Extraction
AR ENJOY	1.000	.796
AR INTEREST	1.000	.821
AR CONCEN	1.000	.606
AR EXPO	1.000	.665
AR CONTROL	1.000	.669
AR INVOLVE	1.000	.573
AR ABILITY	1.000	.668
AR IMPY	1.000	.481
AR EXPY	1.000	.459
AR SUCCESS	1.000	.681
AR WISHDOE	1.000	.296
AR GOOD	1.000	.635

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	61.247	7.350	61.247	61.247

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
AR INTEREST	.906
AR ENJOY	.892
AR SUCCESS	.825
AR CONTROL	.818
AR ABILITY	.817
AR EXPO	.816
AR GOOD	.797
AR CONCEN	.779
AR INVOLVE	.757
AR IMPY	.693
AR EXPY	.677
AR WISHDOE	-.544

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Factor Analysis ESF 3 and 4 PFlow (9-14): MR Variables

Communalities

	Initial	Extraction
MR HAPPY/SAD	1.000	.658
MR WEAK/STRONG	1.000	.663
MR OPEN/CLOSED	1.000	.717
MR ACTIVE/STILL	1.000	.544
MR CHEERFUL/IRRITATED	1.000	.759
MR INVOLVED/UNINVOLVED	1.000	.694
MR EXCITED/BORED	1.000	.564
MR LONELY/IN A GROUP	1.000	.769
MR ALERT/SLEEPY	1.000	.584
MR RELAXED/UPTIGHT	1.000	.355
MR PROUD/ASHAMED	1.000	.650
MR CLEAR/CONFUSED	1.000	.660
MR COOPERATIVE/COMETITIVE	1.000	.531

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.896	53.045	53.045	6.896	53.045	53.045	5.985	46.039	46.039
2	1.252	9.633	62.678	1.252	9.633	62.678	2.163	16.639	62.678
3	.923	7.097	69.775						
4	.853	6.559	76.335						
5	.652	5.014	81.348						
6	.491	3.777	85.125						
7	.392	3.012	88.137						
8	.381	2.933	91.071						
9	.319	2.450	93.521						
10	.267	2.055	95.576						
11	.246	1.889	97.465						
12	.204	1.573	99.038						
13	.125	.962	100.000						

ESF 3 and 4 PFlow Factor Analysis SPSS All Output

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.896	53.045	53.045	6.896	53.045	53.045	5.985	46.039	46.039
2	1.252	9.633	62.678	1.252	9.633	62.678	2.163	16.639	62.678
3	.923	7.097	69.775						
4	.853	6.559	76.335						
5	.652	5.014	81.348						
6	.491	3.777	85.125						
7	.392	3.012	88.137						
8	.381	2.933	91.071						
9	.319	2.450	93.521						
10	.267	2.055	95.576						
11	.246	1.889	97.465						
12	.204	1.573	99.038						
13	.125	.962	100.000						

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component	
	1	2
MR CHEERFUL/IRRITATED	.866	-.097
MR OPEN/CLOSED	.837	.127
MR INVOLVED/UNINVOLVED	.824	-.126
MR HAPPY/SAD	.806	-.092
MR PROUD/ASHAMED	.802	.080
MR CLEAR/CONFUSED	.790	.187
MR ALERT/SLEEPY	.752	.136
MR ACTIVE/STILL	.727	.126
MR EXCITED/BORED	.725	.196
MR COOPERATIVE/COMETITIVE	.686	.246
MR RELAXED/UPTIGHT	.571	.169
MR LONELY/IN A GROUP	-.479	.734
MR WEAK/STRONG	-.451	.678

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

ESF 3 and 4 PFlow Factor Analysis SPSS All Output

Rotated Component Matrix[a]

	Component	
	1	2
MR OPEN/CLOSED	.818	.220
MR CLEAR/CONFUSED	.799	.146
MR PROUD/ASHAMED	.767	.249
MR CHEERFUL/IRRITATED	.754	.437
MR ALERT/SLEEPY	.743	.178
MR EXCITED/BORED	.742	.112
MR COOPERATIVE/COMETITIVE	.727	.050
MR ACTIVE/STILL	.716	.176
MR INVOLVED/UNINVOLVED	.704	.446
MR HAPPY/SAD	.701	.408
MR RELAXED/UPTIGHT	.591	.075
MR LONELY/IN A GROUP	-.144	-.865
MR WEAK/STRONG	-.141	-.802

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Component Transformation Matrix

Component	1	2
1	.916	.402
2	.402	-.916

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

ESF 3 and 4 Factor Analysis PFlow (9-14): S and T Variables

Communalities

	Initial	Extraction
Express your opinions?	1.000	.844
Others really listening to you?	1.000	.828
Care about what others say?	1.000	.585

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.257	75.224	75.224	2.257	75.224	75.224
2	.561	18.684	93.908			
3	.183	6.092	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Express your opinions?	.919
Others really listening to you?	.910
Care about what others say?	.765

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Rotated Component Matrix[a]

a. Only one component was extracted. The solution cannot be rotated.

Appendix 7
ESF 3 and 4 No Flow (8 or less)

ESF 3 and 4 Factor Analysis No Flow (8 or less): AR Variables

Communalities

	Initial	Extraction
AR ENJOY	1.000	.770
AR INTEREST	1.000	.879
AR CONCEN	1.000	.704
AR EXPO	1.000	.637
AR CONTROL	1.000	.784
AR INVOLVE	1.000	.687
AR ABILITY	1.000	.362
AR EXPY	1.000	.483
AR IMPY	1.000	.653
AR SUCCESS	1.000	.833
AR WISHDOE	1.000	.849
AR GOOD	1.000	.573

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	6.981	58.175	
2	1.232	10.267	
3	.898	7.485	75.927
4	.746	6.213	82.140
5	.602	5.014	87.154
6	.411	3.423	90.577
7	.382	3.187	93.764
8	.264	2.197	95.961
9	.191	1.592	97.553
10	.151	1.256	98.809
11	.092	.769	99.578
12	.051	.422	100.000

Extraction Method: Principal Component Analysis.

Appendix 7
ESF 3 and 4 No Flow (8 or less)

Total Variance Explained

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	58.175	6.981	58.175	58.175
2	68.442	1.232	10.267	68.442

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	6.015	50.122	50.122
2	2.198	18.321	68.442

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component	
	1	2
AR SUCCESS	.902	.138
AR INTEREST	.893	-.286
AR CONTROL	.883	.072
AR ENJOY	.834	-.273
AR INVOLVE	.814	.158
AR IMPY	.780	-.211
AR EXPO	.764	.230
AR GOOD	.756	-.022
AR CONCEN	.746	.383
AR EXPY	.678	.152
AR ABILITY	.594	.098
AR WISHDOE	-.317	.865

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Appendix 7
ESF 3 and 4 No Flow (8 or less)

Rotated Component Matrix[a]

	Component	
	1	2
AR SUCCESS	.879	.244
AR CONCEN	.838	-.044
AR CONTROL	.835	.296
AR INVOLVE	.807	.190
AR EXPO	.791	.104
AR INTEREST	.697	.627
AR EXPY	.681	.139
AR GOOD	.681	.331
AR ENJOY	.649	.591
AR IMPY	.625	.513
AR ABILITY	.582	.154
AR WISHDOE	.065	-.919

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Appendix 7
ESF 3 and 4 No Flow (8 or less)

Factor Analysis ESF 3 and 4 No Flow (8 or less): MR Variables

Communalities

	Initial	Extraction
MR HAPPY/SAD	1.000	.650
MR WEAK/STRONG	1.000	.384
MR OPEN/CLOSED	1.000	.879
MR ACTIVE/STILL	1.000	.820
MR CHEERFUL/IRRITATED	1.000	.762
MR INVOLVED/UNINVOLVED	1.000	.688
MR EXCITED/BORED	1.000	.845
MR LONELY/IN A GROUP	1.000	.838
MR ALERT/SLEEPY	1.000	.807
MR RELAXED/UPTIGHT	1.000	.663
MR PROUD/ASHAMED	1.000	.813
MR CLEAR/CONFUSED	1.000	.797
MR COOPERATIVE/COMETITIVE	1.000	.746

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	7.412	57.014	
2	1.190	9.156	
3	1.090	8.382	
4	.922	7.090	81.642
5	.523	4.023	85.665
6	.480	3.691	89.356
7	.352	2.711	92.067
8	.304	2.335	94.402
9	.265	2.039	96.441
10	.170	1.309	97.750
11	.147	1.130	98.880
12	.079	.610	99.490
13	.066	.510	100.000

Extraction Method: Principal Component Analysis.

Appendix 7
ESF 3 and 4 No Flow (8 or less)

Total Variance Explained

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	57.014	7.412	57.014	57.014
2	66.170	1.190	9.156	66.170
3	74.552	1.090	8.382	74.552

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	5.434	41.797	41.797
2	3.077	23.669	65.466
3	1.181	9.086	74.552

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component		
	1	2	3
MR EXCITED/BORED	.899	-.185	.048
MR OPEN/CLOSED	.869	-.347	-.050
MR PROUD/ASHAMED	.868	.216	.111
MR ALERT/SLEEPY	.867	-.218	.091
MR CHEERFUL/IRRITATED	.852	-.158	-.102
MR ACTIVE/STILL	.838	-.317	-.130
MR COOPERATIVE/COMETITIVE	.836	.184	-.118
MR INVOLVED/UNINVOLVED	.750	.286	-.209
MR RELAXED/UPTIGHT	.736	.246	.246
MR HAPPY/SAD	.687	-.180	-.382
MR CLEAR/CONFUSED	.671	.587	.052
MR WEAK/STRONG	.355	.383	.334
MR LONELY/IN A GROUP	.251	-.340	.812

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Appendix 7
ESF 3 and 4 No Flow (8 or less)

Rotated Component Matrix[a]

	Component		
	1	2	3
MR OPEN/CLOSED	.898	.192	.186
MR ACTIVE/STILL	.883	.177	.097
MR EXCITED/BORED	.817	.363	.215
MR CHEERFUL/IRRITATED	.811	.318	.062
MR ALERT/SLEEPY	.792	.331	.264
MR HAPPY/SAD	.769	.134	-.203
MR COOPERATIVE/COMETITIVE	.639	.574	-.088
MR CLEAR/CONFUSED	.260	.847	-.109
MR PROUD/ASHAMED	.582	.680	.112
MR RELAXED/UPTIGHT	.418	.667	.209
MR WEAK/STRONG	.010	.589	.194
MR INVOLVED/UNINVOLVED	.548	.582	-.220
MR LONELY/IN A GROUP	.124	.091	.902

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Component Transformation Matrix

Component	1	2	3
1	.827	.552	.110
2	-.474	.789	-.391
3	-.302	.272	.914

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Component Transformation Matrix

Component	1	2
1	.912	.410
2	.410	-.912

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Appendix 7
ESF 3 and 4 No Flow (8 or less)

Factor Analysis ESF 3 and 4 No Flow (8 or Less): S&T Variables

Communalities

	Initial	Extraction
Express your opinions?	1.000	.678
Others really listening to you?	1.000	.810
Care about what others say?	1.000	.438

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	1.925	64.181	
2	.764	25.464	89.646
3	.311	10.354	100.000

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	64.181	1.925	64.181	64.181

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Others really listening to you?	.900
Express your opinions?	.823
Care about what others say?	.662

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Appendix 7
ESF 3 and 4 AFlow and BFlow Factor Analysis

ESF3 and 4 Factor Analysis AFlow (Challenge 5 or More) AR Variables

Communalities

	Initial	Extraction
AR ENJOY	1.000	.835
AR INTEREST	1.000	.847
AR CONCEN	1.000	.570
AR EXPO	1.000	.765
AR CONTROL	1.000	.836
AR INVOLVE	1.000	.783
AR ABILITY	1.000	.819
AR IMPY	1.000	.685
AR EXPY	1.000	.663
AR SUCCESS	1.000	.780
AR WISHDOE	1.000	.613
AR GOOD	1.000	.584

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	6.317	52.641	
2	1.288	10.730	
3	1.175	9.791	
4	.817	6.810	79.973
5	.698	5.818	85.791
6	.535	4.455	90.246
7	.311	2.594	92.839
8	.295	2.457	95.296
9	.237	1.976	97.272
10	.144	1.197	98.469
11	.097	.810	99.279
12	.087	.721	100.000

Extraction Method: Principal Component Analysis.

Appendix 7
ESF 3 and 4 AFlow and BFlow Factor Analysis

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.340	27.834	27.834
2	3.270	27.252	55.086
3	2.169	18.077	73.163

Extraction Method: Principal Component Analysis.

mponent Matrix[a]

	Component		
	1	2	3
AR INTEREST	.907	-.156	.026
AR ENJOY	.897	-.141	.106
AR CONTROL	.817	.251	-.324
AR SUCCESS	.817	.022	.336
AR EXPO	.794	.368	.010
AR IMPY	.743	-.361	-.051
AR GOOD	.729	.118	.197
AR INVOLVE	.667	.238	-.530
AR CONCEN	.642	.393	-.060
AR EXPY	.565	-.415	-.414
AR WISHDOE	-.303	.718	.071
AR ABILITY	.612	-.038	.665

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Appendix 7
ESF 3 and 4 AFlow and BFlow Factor Analysis

Rotated Component Matrix[a]

	Component		
	1	2	3
AR INVOLVE	.850	.025	.245
AR CONTROL	.838	.281	.233
AR EXPO	.699	.526	.018
AR CONCEN	.653	.376	-.045
AR ABILITY	.005	.901	.081
AR SUCCESS	.351	.780	.220
AR ENJOY	.445	.649	.465
AR GOOD	.422	.620	.145
AR INTEREST	.488	.594	.507
AR WISHDOE	.142	-.116	-.761
AR EXPY	.377	.029	.721
AR IMPY	.318	.424	.636

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Component Transformation Matrix

Component	1	2	3
1	.644	.638	.421
2	.525	.032	-.851
3	-.556	.769	-.315

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Appendix 7
ESF 3 and 4 AFlow and BFlow Factor Analysis

Factor Analysis AFlow (Challenge 5 or more)
MR Variables

Communalities

	Initial	Extraction
MR HAPPY/SAD	1.000	.756
MR WEAK/STRONG	1.000	.799
MR OPEN/CLOSED	1.000	.749
MR ACTIVE/STILL	1.000	.751
MR CHEERFUL/IRRITATED	1.000	.770
MR INVOLVED/UNINVOLVED	1.000	.784
MR EXCITED/BORED	1.000	.812
MR LONELY/IN A GROUP	1.000	.820
MR ALERT/SLEEPY	1.000	.703
MR RELAXED/UPTIGHT	1.000	.670
MR PROUD/ASHAMED	1.000	.786
MR CLEAR/CONFUSED	1.000	.711
MR COOPERATIVE/COMETITIVE	1.000	.670

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	7.349	56.527	
2	1.425	10.958	
3	1.009	7.759	
4	.820	6.307	81.551
5	.640	4.923	86.474
6	.504	3.876	90.349
7	.328	2.522	92.872
8	.262	2.018	94.889
9	.194	1.493	96.382
10	.181	1.396	97.778
11	.139	1.068	98.846
12	.092	.705	99.551
13	.058	.449	100.000

Extraction Method: Principal Component Analysis.

Appendix 7
ESF 3 and 4 AFlow and BFlow Factor Analysis

Total Variance Explained

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	56.527	7.349	56.527	56.527
2	67.485	1.425	10.958	67.485
3	75.244	1.009	7.759	75.244

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	6.703	51.561	51.561
2	1.576	12.122	63.683
3	1.503	11.561	75.244

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component		
	1	2	3
MR PROUD/ASHAMED	.863	.190	.072
MR INVOLVED/UNINVOLVED	.841	-.192	.200
MR CHEERFUL/IRRITATED	.840	-.248	.047
MR OPEN/CLOSED	.831	.061	-.232
MR ALERT/SLEEPY	.830	.080	-.089
MR HAPPY/SAD	.819	-.106	.271
MR CLEAR/CONFUSED	.816	.204	.055
MR EXCITED/BORED	.800	.219	-.352
MR RELAXED/UPTIGHT	.793	.190	.073
MR ACTIVE/STILL	.779	-.094	-.368
MR COOPERATIVE/COMETITIVE	.649	.284	.410
MR LONELY/IN A GROUP	-.267	.746	-.438
MR WEAK/STRONG	-.322	.704	.446

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Appendix 7
ESF 3 and 4 AFlow and BFlow Factor Analysis

Rotated Component Matrix[a]

	Component		
	1	2	3
MR PROUD/ASHAMED	.879	.114	.029
MR CLEAR/CONFUSED	.839	.082	.022
MR EXCITED/BORED	.820	-.199	.318
MR RELAXED/UPTIGHT	.813	.098	.012
MR ALERT/SLEEPY	.808	.080	.210
MR OPEN/CLOSED	.799	.000	.331
MR HAPPY/SAD	.745	.446	.050
MR INVOLVED/UNINVOLVED	.735	.467	.160
MR COOPERATIVE/COMETITIVE	.716	.216	-.334
MR CHEERFUL/IRRITATED	.713	.407	.310
MR ACTIVE/STILL	.696	.011	.516
MR LONELY/IN A GROUP	-.016	-.886	-.187
MR WEAK/STRONG	-.062	-.292	-.842

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 14 iterations.

Component Transformation Matrix

Component	1	2	3
1	.944	.236	.231
2	.329	-.720	-.611
3	.022	.653	-.757

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Appendix 7
ESF 3 and 4 AFlow and BFlow Factor Analysis

Factor Analysis ESF 3 and 4 AFlow (Challenge 5 or more) S&T Variables

Communalities

	Initial	Extraction
Express your opinions?	1.000	.838
Others really listening to you?	1.000	.860
Care about what others say?	1.000	.538

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	2.236	74.545	
2	.609	20.310	94.855
3	.154	5.145	100.000

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	74.545	2.236	74.545	74.545

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Others really listening to you?	.927
Express your opinions?	.916
Care about what others say?	.734

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Appendix 7 SPSS Outputs
ESF 3 and 4 Factor Analysis AFlow and BFlow

Factor Analysis BFlow (Skills 5 or more)
AR Variables

Communalities

	Initial	Extraction
AR ENJOY	1.000	.707
AR INTEREST	1.000	.813
AR CONCEN	1.000	.594
AR EXPO	1.000	.570
AR CONTROL	1.000	.744
AR INVOLVE	1.000	.806
AR ABILITY	1.000	.600
AR IMPY	1.000	.674
AR EXPY	1.000	.564
AR SUCCESS	1.000	.772
AR WISHDOE	1.000	.535
AR GOOD	1.000	.761

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	6.936	57.802	
2	1.205	10.038	
3	.815	6.788	74.627
4	.761	6.341	80.968
5	.493	4.107	85.075
6	.441	3.677	88.752
7	.360	2.997	91.749
8	.316	2.635	94.385
9	.268	2.230	96.614
10	.217	1.806	98.420
11	.118	.984	99.404
12	.072	.596	100.000

Extraction Method: Principal Component Analysis.

Appendix 7 SPSS Outputs
ESF 3 and 4 Factor Analysis AFlow and BFlow

Total Variance Explained

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	57.802	6.936	57.802	57.802
2	67.840	1.205	10.038	67.840

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	4.623	38.524	38.524
2	3.518	29.316	67.840

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component	
	1	2
AR GOOD	.872	-.018
AR INTEREST	.866	-.252
AR SUCCESS	.801	.362
AR INVOLVE	.795	.417
AR CONTROL	.787	.354
AR ENJOY	.773	-.331
AR CONCEN	.771	.000
AR EXPO	.746	.117
AR EXPY	.741	-.120
AR ABILITY	.732	.252
AR IMPY	.601	-.559
AR WISHDOE	-.582	.444

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Appendix 7 SPSS Outputs
ESF 3 and 4 Factor Analysis AFlow and BFlow

Rotated Component Matrix[a]

	Component	
	1	2
AR INVOLVE	.879	.183
AR SUCCESS	.848	.229
AR CONTROL	.832	.226
AR ABILITY	.726	.270
AR GOOD	.662	.568
AR EXPO	.651	.383
AR CONCEN	.595	.489
AR IMPY	.109	.814
AR ENJOY	.387	.746
AR INTEREST	.508	.745
AR WISHDOE	-.168	-.712
AR EXPY	.496	.563

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Component Transformation Matrix

Component	1	2
1	.772	.635
2	.635	-.772

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Factor Analysis BFlow (Skills 5 or more)
MR Variables

Communalities

	Initial	Extraction
MR HAPPY/SAD	1.000	.734
MR WEAK/STRONG	1.000	.856
MR OPEN/CLOSED	1.000	.726
MR ACTIVE/STILL	1.000	.734
MR CHEERFUL/IRRITATED	1.000	.818
MR INVOLVED/UNINVOLVED	1.000	.825
MR EXCITED/BORED	1.000	.690
MR LONELY/IN A GROUP	1.000	.827
MR ALERT/SLEEPY	1.000	.574
MR RELAXED/UPTIGHT	1.000	.572
MR PROUD/ASHAMED	1.000	.686
MR CLEAR/CONFUSED	1.000	.636
MR COOPERATIVE/COMETITIVE	1.000	.702

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	6.740	51.844	
2	1.546	11.895	
3	1.096	8.429	
4	.946	7.279	79.446
5	.648	4.982	84.429
6	.430	3.306	87.734
7	.371	2.858	90.592
8	.301	2.312	92.904
9	.282	2.171	95.075
10	.264	2.029	97.104
11	.168	1.289	98.393
12	.150	1.154	99.547
13	.059	.453	100.000

Extraction Method: Principal Component Analysis.

Appendix 7 SPSS Outputs
ESF 3 and 4 Factor Analysis AFlow and BFlow

Total Variance Explained

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	51.844	6.740	51.844	51.844
2	63.739	1.546	11.895	63.739
3	72.167	1.096	8.429	72.167

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	5.159	39.681	39.681
2	2.429	18.683	58.364
3	1.794	13.803	72.167

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component		
	1	2	3
MR CHEERFUL/IRRITATED	.875	.111	-.203
MR INVOLVED/UNINVOLVED	.870	.183	-.187
MR COOPERATIVE/COMETITIVE	.827	-.097	-.088
MR OPEN/CLOSED	.825	.184	-.108
MR HAPPY/SAD	.815	.131	-.229
MR PROUD/ASHAMED	.807	-.136	-.129
MR CLEAR/CONFUSED	.740	-.076	-.288
MR ALERT/SLEEPY	.735	-.075	.170
MR ACTIVE/STILL	.676	.411	.327
MR EXCITED/BORED	.668	.186	.458
MR RELAXED/UPTIGHT	.531	-.111	.527
MR LONELY/IN A GROUP	-.331	.808	.254
MR WEAK/STRONG	-.393	.736	-.400

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Appendix 7 SPSS Outputs
ESF 3 and 4 Factor Analysis AFlow and BFlow

Rotated Component Matrix[a]

	Component		
	1	2	3
MR CHEERFUL/IRRITATED	.861	.266	-.073
MR INVOLVED/UNINVOLVED	.861	.289	-.003
MR HAPPY/SAD	.828	.218	-.039
MR OPEN/CLOSED	.783	.335	.004
MR CLEAR/CONFUSED	.760	.098	-.220
MR COOPERATIVE/COMETITIVE	.730	.310	-.271
MR PROUD/ASHAMED	.726	.258	-.302
MR ALERT/SLEEPY	.524	.491	-.243
MR EXCITED/BORED	.364	.747	.010
MR RELAXED/UPTIGHT	.165	.693	-.253
MR ACTIVE/STILL	.474	.674	.235
MR LONELY/IN A GROUP	-.277	.185	.846
MR WEAK/STRONG	-.011	-.419	.825

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Component Transformation Matrix

Component	1	2	3
1	.847	.484	-.219
2	.162	.157	.974
3	-.506	.861	-.054

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Appendix 7 SPSS Outputs
ESF 3 and 4 Factor Analysis AFlow and BFlow

Factor Analysis BFlow (Skills 5 or more)

S&T Variables

Communalities

	Initial	Extraction
Express your opinions?	1.000	.836
Others really listening to you?	1.000	.791
Care about what others say?	1.000	.524

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	2.151	71.713	
2	.634	21.123	92.836
3	.215	7.164	100.000

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues	Extraction Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	71.713	2.151	71.713	71.713

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Express your opinions?	.914
Others really listening to you?	.889
Care about what others say?	.724

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

ESF 3 and 4 Multiple Regression (Clarification of results presented in Table 4.17, Chapter 4, page 110)

1. ENGAGEMENT and POTENCY

The following draws on Howitt and Cramer (2008, page 266) to explain how to interpret the output:

'The quickest way to access the output from multiple regression is to concentrate on the final model's output in the table labelled Coefficients. Ignore the row for constants, then concentrate on the remaining rows. These give the predictors of the dependent variable'. [In this study these are the items from the ENGAGEMENT and INTERACTION factor: EXPY, INTEREST, CONCEN and the items form the INTERACTION factor, EXPRESSY all of which contribute significantly]. 'B weights are hard to interpret since they are dependent on the scale of measurement involved. Beta weights are analogous to correlation coefficients. All Beta weights are positive so there is a positive relation between each predictor and the dependent variable' [i.e. Flow]. EXPY has a correlation of .328 with Flow and INTEREST contributes an additional independent correlation of .216 with Flow. These are followed by an additional independent correlation of .191(CONCEN). The t values plus their corresponding Sig. Values indicate that these three independent variables contribute significantly to the prediction. The part correlations of EXPY, INTEREST, CONCEN are .250, .135 and .128 respectively so they explain about 6%, 2% and 2% of the variance in Flow when not taking into account the variance share together. As the total percentage of variance these three variables is about 41% this means that the percentage of variance they share is about 31% (41%-10%).

ESF 3 and 4 In Flow (N=46) Output for Step-wise Regression

1. Predictors for Flow – ENGAGEMENT and POTENCY Factor

Coefficients(a)

a Dependent Variable: Challenge+Skill

Model		Unstandardized Coefficients		Standardized Coefficients	t	sig	95% Confidence Interval for B		Correlations		
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	5.904	.549		10.758	.000	4.823	6.986			
	AR EXPY	.919	.088	.572	10.387	.000	.744	1.093	.572	.572	.572
2	(Constant)	4.060	.639		6.353	.000	2.800	5.319			
	AR EXPY	.576	.108	.359	5.310	.000	.362	.790	.572	.336	.278
	AR INTEREST	.602	.121	.337	4.993	.000	.364	.839	.564	.318	.261
3	(Constant)	3.366	.691		4.874	.000	2.005	4.728			
	AR EXPY	.527	.109	**.328**	4.836	**.000**	.312	.742	.572	.310	**.250**
	AR INTEREST	.386	.147	**.216**	2.619	**.009**	.096	.677	.564	.174	**.135**
	AR CONCEN	.359	.145	**.191**	2.481	**.014**	.074	.644	.533	.165	**.128**

ESF 3 and 4 In Flow (N=46) Output for Step-wise Regression

Model Summary ESF 3 and 4

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.572(a)	**.327**	.324	3.16415	.327	107.899	1	222	.000
2	.629(b)	.395	.390	3.00626	.068	24.930	1	221	.000
3	.642(c)	**.412**	.404	2.97179	.016	6.157	1	220	.014

a Predictors: (Constant), AR EXPY
b Predictors: (Constant), AR EXPY, AR INTEREST
c Predictors: (Constant), AR EXPY, AR INTEREST, AR CONCEN

In Model 1, R Square is the multiple correlation coefficient squared i.e. .327 or .33 to two decimal places. This indicates that 33% of the variance is shared with or 'explained by' the first predictor. In Model 3, R Square for all three variables is .412 which means that all three variables explain 41% of the variance for Flow.

ESF 3 and 4 In Flow (N=46) Output for Step-wise Regression

2. Predictors for Flow – INTERACTION Factor – EXPRESSY (Express your opinions?)

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations		
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part
1(Constant)	12.952	1.101		11.764	.000	10.731	15.172			
Express your opinions?	.407	.137	.414	2.980	.005	.132	.683	.414	.414	**.414**

a. Dependent Variable: Challenge+Skill

In the Coefficients output above, INTERACTION variable (EXPRESSY) in Table 4.17, the t value plus the corresponding Sig. Value indicates that the independent variable, 'Express your opinions?' (EXPRESSY) contributes significantly to the prediction.

Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.414[a]	**.171**	.152	1.03152

a. Predictors: (Constant), Express your opinions?

In Model 1, R Square is the multiple correlation coefficient squared, in this instance 0 .171 or 0.17 to two decimal places. This indicates that 17% of the variance is shared with or 'explained by' the first predictor, 'Express your opinions' (EXPRESSY). Note that the part correlation is .414 which when squared is about 17%.