

**Developing heightened listening:  
A creative tool for introducing  
primary school children to  
sound-based music**

**Volume 1 of 2**

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**Submitted in partial fulfilment of  
the requirements for the degree of  
Doctor of Philosophy**

**De Montfort University**

**July 2016**

**Research sponsored by the AHRC Midlands3Cities Doctoral  
Training Partnership**

## **Abstract**

Sound-based music (sbm), which is an umbrella term created by Landy (2007) for music where sound is the main unit rather than the musical note, rarely features in music curricula in schools and currently has a relatively small audience outside of academia. Building on previous research conducted at De Montfort University concerned with widening access to sbm, this thesis investigates whether sbm composition can provide an engaging experience for Key Stage 2 (7-11 year olds) pupils supported by the development of heightened listening skills. The research is interdisciplinary spanning sbm studies, music technology and education, and involved case studies in eight schools with 241 children conducted from 2013 to 2015. Each case study included a series of workshops in which the pupils developed listening skills, recorded sounds and created sound-based compositions. Using a grounded theory approach, qualitative and quantitative data was gathered over three phases through questionnaires, teacher feedback, observations, recordings and pupils' work.

The results of the research indicate that the children had a high level of engagement with the workshop activities. The data also suggests that the heightened listening training helped to support the pupils in their compositional work. The main factor in this engagement appeared to be the opportunity to be creative, which is something that reports since the 1990s have highlighted as essential for all children. Additionally, a range of complex local conditions influenced engagement in each case study and there were indications that engagement also decreased with age.

Pupils chose a variety of different approaches for composing sound-based work that ranged from incorporating detailed narratives to focusing purely on experimenting with the sound itself without reference to any external themes. The compositional pathway chosen by each pupil seemed to be partly influenced by previous musical experience.

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### Contact details

The researcher can be contacted for materials necessary for running the workshops (such as the sound bank audio files) via email ([dholland@dmu.ac.uk](mailto:dholland@dmu.ac.uk) or [kipdave@hotmail.co.uk](mailto:kipdave@hotmail.co.uk)). All data collected in the research is available upon request apart from audio examples (see below).

### Statement regarding compositional work and accompanying DVD

The compositions created by pupils for this research are not publically available in accordance with agreements made with participating schools. A DVD including compositional examples (see attached and Appendix K) is provided for examiners and this is referred to throughout the thesis.

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## **Acknowledgements**

I am extremely grateful to all the people who supported me in doing this research and to the Midlands3Cities for funding it and offering so many opportunities for my professional and academic development.

In particular I would like to thank my supervisors Prof. Leigh Landy and Dr Sarah Younie who have provided so much valuable advice and have always been available when I needed support. The combination of their different expertise has helped to guide the research through its most difficult periods. I would also like to thank all members of the Music, Technology and Innovation Research Centre at De Montfort University whose diverse range of knowledge has informed my research through discussion, seminars and postgraduate events such as SSSP (Sound, Sight Space and Play conference).

Special thanks must go to all the teachers and pupils who took part in the research without whom it would not have been possible and who provided so many insights as well as such a rewarding experience.

Finally, I would like to express gratitude to my family and friends for their help and understanding and who have provided essential respite over the past few years when I needed it.

I would like to dedicate this research to my partner Jo for her continual acts of kindness, patience and support and my new son Mackenzie from whom I have already learnt so much.

# 1 Introduction to the research

This thesis is concerned with investigating whether Key Stage 2 (KS2) children can engage with sound-based music (sbm) through compositional practice using heightened listening skills as a creative tool (in England and Wales KS2 is the term for the period of schooling that includes 7-11 year olds). The term sound-based music was created by Leigh Landy (2007) as an umbrella term to include types of music that do not use the musical note as their main unit and usually include material that is recorded (e.g., environmental recordings) or that has been electronically synthesised. Various other terms for this type of music are in use, such as electroacoustic music or sonic art, and it was in part to address the confusion that this can create that Landy suggested sbm as a less ambiguous umbrella term (for a full explanation see Landy, 2007). The focus of this research project is on soundscape or 'real-world' electroacoustic music where recorded sound is usually edited and manipulated to some degree and is the primary unit of composition. Throughout the thesis the abbreviated term sbm will be used in reference to this kind of music.

The project builds on earlier research conducted at the Music, Technology and Innovation Research Centre at De Montfort University (DMU), Leicester UK. This includes doctoral research conducted by Motje Wolf (2013a; 2013b) followed by Nasia Therapontos (2013) and the EARS 2 initiative (see Landy et al., 2013). Principally it leads on from the Heightened Listening (HL) project (Holland, 2011), which was master's research that preceded this current project (the HL2 doctoral project) and laid its foundations. Like the projects listed above the HL2 doctoral project is interdisciplinary in nature, combining knowledge from three main fields, which are sbm studies, educational studies and music technology. Interdisciplinary research is becoming increasingly common and funding organisations recognise its value (Lyll, Bruce, Tait and Meagher, 2011: 1), as it is well situated to investigate some of the inherently complex questions that face modern societies (National Academy of Sciences, National Academy of Engineering and Institute of Medicine, 2005:2). It was extremely useful for this research to take an interdisciplinary

approach that drew on knowledge from these different fields in order to address some of the complexities involved in investigating children's responses to creatively experiencing sbm.

The HL project investigated the potential for widening access to electroacoustic music through learning HL skills with Key Stage 3 pupils (11-14 year olds). It built on the Intention/Reception project, which demonstrated that a significant percentage of inexperienced listeners can appreciate electroacoustic music, particularly when real-world sounds are used as material (Weale, 2006; Landy, 2006). Part of the reason for this growing body of research is because sbm is largely practiced and performed in universities with little recognition beyond this type of context. As the composer Katharine Norman has suggested, the culture of sbm can appear rather insular and inaccessible to newcomers or outsiders:

entire audiences for electroacoustic music can sometimes fade into a collective entity of like-minded peers, still largely situated within either academia or other rather esoteric cliques. (Norman, 2010: 117)

For the HL project, heightened listening was defined as a close concentration on sound that allows external links to be made (e.g., to the source of the sound). This is distinct from reduced listening, which is another listening strategy commonly discussed in electroacoustic music where the listener actively ignores the sound's source in order to concentrate purely on the musicality of the sound itself. As a means of enabling creative practice in sbm, the current research has aimed to develop heightened listening as a compositional tool that can be used to explore the imaginative aspects of sounds. In doing so, participant pupils were encouraged to form narratives or themes to help them structure and develop compositional ideas.

The HL2 doctoral project is based on a constructivist approach to teaching and proposes that pupils might easily engage with sbm by constructing their own understanding of it from 'inside the music'. Constructivist approaches that have influenced this research are most principally based on the work of educational

psychologists such as Piaget (1953; 1972), Vygotsky (1978) and Bruner (1986; 1996). Such approaches are characterised by learning where pupils actively construct their own knowledge through individual and social activities (Biggs, 1996: 348). The research methodology involved a series of workshops where participant pupils learned heightened listening skills as a tool to help them record sounds, which they then used in their own sound-based compositions. In doing so it enabled pupils to experience the potential offered by sbm through creative practice. The main aims of the research are as follows:

- To investigate the use of heightened listening as a pedagogical tool to help facilitate greater interest in sbm.
- To explore the use of such a listening practice as an effective compositional tool for Key Stage 2 children.
- To build musical confidence in pupils of all abilities. Sbm provides a unique opportunity for children without musical training to creatively explore communication through sound.

### **Structure of the thesis**

Chapter 2 provides a review of the literature. First there is a discussion of the constructivist learning theories that underpin the research. Additionally, the pedagogical potential of creativity and its connection with constructivism are examined. Following this the chapter reviews other projects that have involved sbm and education, such as the ones connected with DMU (as mentioned above). The role of soundscape theory in education, which has been very influential on the approach used in the HL2 doctoral project, is also reviewed. Finally, the chapter examines the different listening strategies used in sbm and how these relate to the development of the concept of heightened listening used in this research. Heightened listening is an acute awareness of sound that can be developed through listening practice. This awareness can include listening to the intrinsic qualities of the sound such as spectral characteristics and how these change over time. It also includes an awareness of referential aspects of the sound such as its

source and environmental context, as well as more imaginative associations that might be triggered by listening to all these aspects.

Chapter 3 outlines the methodology used for the research and first explains the philosophies that underpin and inform the methodology. The methodology involved using a case study approach that was influenced by grounded theory and complexity theory. Complexity theory views phenomena in non-linear and holistic terms and sees different elements and participants as interconnected, variable and self organised (Cohen et al, 2011: 28). In grounded theory the aim is to generate theories from the data rather than testing a hypothesis that has already been developed (ibid: 598). It is an open-minded approach to research in which ideas are continually tested and compared with new sets of data.

A case study approach is often used for grounded theory research and the HL2 doctoral project conducted multi-site case studies in eight schools across the Midlands through a series of workshops in each school. In total thirty-nine workshops were run in phase 1, twenty-five in phase 2 and four in phase 3, meaning that sixty eight workshops were conducted in total across the whole project with 241 children. In the workshops the pupils learnt listening skills to help support the creation of compositions made from sounds they recorded around their schools. The chapter provides a detailed outline of the workshop structures along with the methods of data collection. Each phase of the research had a slightly different focus that was determined by the data that had emerged in the previous phase, which is consistent with a grounded theory approach. Additionally, chapter 3 will provide rationales for the methods of sampling and data analysis, both of which were also informed by grounded theory.

Chapter 4 is divided into three sections with each dedicated to the analysis of the data from the three main phases of the research. Phase 1 involved six case studies in schools across the Midlands and section 4.2 presents the data from this phase while explaining how this led to the second phase. Phase 2 involved two case studies in the West Midlands and the data from this phase is analysed and evaluated in section 4.3. From these first two phases the theory of the heightened

listening (HL) scale was developed and this was investigated further in phase 3 in accordance with a grounded theory approach. The data from this phase is analysed in section 4.4 and evaluated in relation to the theory of the HL scale. The HL scale includes the different aspects of heightened listening (as described above) in reference to particular compositional activities that the participating pupils engaged in. For example, one extreme of the scale represents internalised listening or listening with imaginative associations. This type of listening was accompanied by the creation of narratives to help structure the composition, which were represented in different forms such as writing or drawing. However, the other end of the scale represents awareness of particular sonic attributes (such as the spectral qualities). This type of listening was accompanied by pure sonic experimentation with no reference to a theme or narrative. In between the two extremes of the scale are activities that represent a variation on both and the results suggested that pupils appeared to move around the scale during the compositional process.

Chapter 5 provides an overall evaluation of the data and identifies the main themes that emerged from the research. Two main themes (including a number of sub-themes) were identified that influenced engagement, namely creativity and local conditions. Additionally, age was also a significant factor in engagement as positive responses in relation to whether participants wanted to create sbm in the future appeared to decrease in the older groups. Chapter 5 also provides an explanation of the research's original contribution to knowledge. This is summarised by way of the following six main contributions:

- The use of heightened listening as a compositional tool for KS2 children
- The HL scale
- Creativity as the main driver for engagement with sbm
- The influence of contextual complexity on engagement with sbm
- Providing a resource for educators and researchers
- The relationship between age and engagement with sbm

Additionally, key areas for future research that have arisen from the project are identified. In particular these include investigating the concept of the HL scale in more detail and gathering additional data on the relationship between age and engagement with sbm.

In order to investigate the key aims identified above, data was triangulated from a range of sources such as questionnaires, the pupils' work, recordings, observations and teacher feedback. Analysis of the data suggests that there is not one appropriate pathway for children when composing sbm. This will depend on the experience, interests and abilities of the particular children. In the workshops the children appeared to creatively apply their listening skills in multiple ways that reflected these individual factors as well as complex contextual factors such as the culture of the school and involvement of the teacher. Overall levels of engagement were very high with over 70% of all the children who completed the questionnaires indicating that they would like to compose sbm again in the future. Additionally, 70% of those pupils felt that the listening training helped to support the compositional process.

These figures are high for a type of music that currently rarely features in music curricula and strongly suggest that sbm can be an engaging form of music for KS2 pupils. Observations and feedback from teachers collected in the HL2 doctoral project also suggest that creative engagement with sbm can have benefits in other subject areas (such as ICT, traditional music and science). The results indicated that the main factor in facilitating engagement was participation in creative activities. This is supported by work from psychologists (see Csikszentmihalyi, 1996; Ryan and Deci, 2000) who suggest that being creative is an important contributor to intrinsic motivation (put simply, doing something for the joy of it rather than because of external rewards or punishments) and long-term wellbeing.



## **2 Literature Review**

### **2.1 Introduction**

This chapter will establish the contextual basis for the project from both pedagogical and musicological perspectives. The learning theories that influenced the development of the workshops, the role of creativity in education and other educational initiatives involving sbm will be discussed. Additionally, listening strategies commonly used in sbm will be examined in relation to heightened listening and this approach will be further developed from its definition in the HL project. This will situate heightened listening in a wider context as an imaginative strategy that can be usefully applied in the activities devised for this research.

### **2.2 Constructivism in Education**

The HL2 doctoral project was based on a constructivist approach to teaching and, before looking at examples of constructivism in connection with sbm (see section 2.3), it would be useful to review the theories that underpin constructivism in education. There are a number of different schools of constructivism and it is difficult to define it as one thing (Perkins, 1999: 7). However, Biggs (1996: 348) believes a general 'consensus would be that learners arrive at meaning by actively selecting, and cumulatively constructing, their own knowledge, through both individual and social activity'. In a constructivist model the learner is always central and learning is active (Biggs and Tang, 2007: 21). It has become a very influential theory of education and has already been used in research in relation to widening access to electroacoustic music in secondary schools where students were allowed to construct their learning 'through doing' (Higgins and Jennings, 2006: 179) by engaging in composition. This approach of learning through doing and reflection is also known as 'experiential learning', which emerged as an influential philosophy in the 1970s through the work of David Kolb (1984) and was heavily influenced by constructivist theories.

One of the key principles of constructivism in education is that 'knowledge and beliefs are formed within the learner' with an emphasis on creativity (Scott, 2006: 17). Additionally, constructivism rejects linear models of learning where a student progresses in sequential stages of understanding, rather it recognises that learning can be recursive and non-linear (Cohen et al, 2000: 10). Similarly, the educational psychologist Jerome Bruner (1960) who will be discussed in section 2.2.2, views learning as a cumulative spiral and created the idea of the spiral curriculum where the learner continually revisits ideas and builds on them until they are fully grasped (ibid: 13).

As Webster notes (2011: 40), what is central to an understanding of constructivism is a consideration of the epistemological question of how knowledge is acquired. For many, Piaget's theories (for example see 1953; 1972) in relation to how children acquire knowledge provide a basis for constructivism. Piaget's cognitive theories will be examined in more detail in the following section.

### **2.2.1 Piaget's Theory of Learning**

In Piaget's theory of learning, knowledge is constructed by the learner through assimilating and accommodating information in ways that relate to and build on their own experience of the world (Piaget, 1953: 6). This happens through the development of schemata (schema in singular form) or mental constructs, which operate as units of knowledge that help an individual to understand the world. Wadsworth (2004: 16) suggests schemata are like index cards in the brain, each one representing a different schema that helps an individual to process and classify incoming information. They are mental structures that develop as a way for individuals to adapt to their environments; they are the means by which the world can be processed, classified and organised intellectually by a person (Wadsworth, 2004: 16). A schema is not just 'a concept, but an elaborated mixture of vocabulary, actions, and experience related to the concept' (Seifert and Sutton, 2011: 30). For example, a 'bird schema' could include 'the child's experiences with birds, pictures of birds, and conversations about birds' (ibid).

Cognitive development according to Piaget involves the assimilation and accommodation of experience resulting in changes to schemata. Piaget derived this view of the construction of knowledge from his own earlier research into aquatic molluscs; he believed that the biological adaptation of an organism to its environment could also be applied to intelligence (Piaget, 1953: 6). In his view 'intelligence is an adaptation' (ibid: 3); just as an organism structures its surrounding environment, organisms also create mental structures or schemata in relation to their environment (ibid: 4).

It is important to note that children actively construct schemata in relation to their experience of the world. In other words, a child's current views of the world will not change just through new information passively received from a teacher, rather new knowledge is constructed through experience of and interaction with the world, things and other people (Ackermann, 2001: 87). In Piaget's view, if this new information does not match with their currently held schema then the child will create a new schema in order to accommodate it (Webster, 2011: 47). When a child tries to assimilate new experiences they are required to modify existing schemata or create a new schema in order to accommodate this new stimulus, as it does not fit with the child's existing schemata (Wadsworth, 2004: 17). These schemata are constructed by children through their own individual experience over time and build on previous schemata.

Wadsworth (2004: 149) stresses exploration as a key aspect to acquiring knowledge in Piaget's model of development. He argues that there are two parts to the construction of knowledge through active exploration, starting with the exploration of an object or an idea. If this results in an imbalance between schemata and experience (or rather assimilation and accommodation) 'then exploration continues, but is focused on making sense of (assimilating) that which produced disequilibrium. This is the construction of knowledge' (ibid). For example, if a child establishes a schema that animals that fly are called birds this schema will need to be modified over time in order to accommodate other flying objects such as butterflies, mosquitoes and aeroplanes (Seifert and Sutton, 2011:

30). It is through active exploration of the world that new information is accommodated and developed into new schemata. Wadsworth (2004: 150) later concludes, 'If an objective of education is to enhance children's acquisition of knowledge, education methods must be based on active exploration.'

Piaget explicitly argued that children need to explore, discover and experiment in order to learn and that this experimentation starts at an early stage (Piaget, 1953: 151). Piaget's theories are closely associated with 'discovery learning', which is learning that is active, exploratory and student driven (Bicknell- Holmes & Hoffman, 2000). Similarly, engaging in sound-based composition is often explored through experimentation with sound. In the HL2 doctoral project, children were encouraged to learn Audacity (free audio editing software, see <http://www.audacityteam.org>) and develop their work through active exploration, whether through listening practice or the manipulation of sounds. A child's cognitive development can only progress in Piaget's model if the child is active, which could involve moving, searching or thinking all of which can 'lead to the construction or reconstruction of schemata' (Wadsworth, 2004: 22).

However, this learning depends on sequential stages of cognitive development identified by Piaget. Development, in Piaget's view, flows in a cumulative way with each stage integrating with and building on the previous one (Wadsworth, 2004: 29). These stages include the sensorimotor stage from birth to 2 years, followed by the stage of preoperational thought (2-7 years) and then the stage of concrete operational thought, which starts around 7 years and lasts up until around the age of 11 (ibid: 28). During this stage of concrete operations the child is able to appreciate different perspectives on an object, for example differentiating between their own perspective and someone else's at a very different vantage point, meaning they can reverse to previous perspectives (Gardner, 1983: 8). At this stage a child has developed logical thought processes that can be applied to problems (Wadsworth, 2004: 91). As argued by Burnard and Younker (2004) music composition involves the ability to solve problems and this is a characteristic of creative activity. This third stage of concrete operational thought

is the one that applies to the children who took part in the HL2 doctoral project.

In Piaget's final stage of formal operations that starts in early adolescence (usually from the age of 11), the child begins to use abstract thought to solve problems by manipulating symbol systems, for example, using equations (Gardner, 1982:8). The key difference between the last two stages is that in the concrete stage children have difficulty understanding or solving problems that do not have some tangibility in the present, for example, such as a hypothetical problem (Wadsworth, 2004: 112). This view of development was considered in the design of the methodology for the HL2 doctoral project meaning that learning was structured around a progressive sequence of concrete activities related to developing the children's listening practice, skills with Audacity and compositions.

Also related to Piaget's theories is the constructionist theory of Seymour Papert (1993) whose work was very influential on educational thinking in the 1990s, particularly his book 'Mindstorms: Children, Computers, and Powerful Ideas'. Papert's theory shares the view with Piaget that knowledge is constructed by the learner but also considers the external influence of different supports such as language and tools. In relation to this, his work has involved a particular interest in the role of digital technology (Papert, 1993). He stresses connectedness as a powerful means of learning, rather than abstract thinking, 'diving in' rather than remaining separate from situations, or as Ackermann argues, 'Becoming one with the phenomenon under study, in other words, is a key to learning.' (Ackermann, 2004: 20).

This view of learning connects with one important aspect of Piaget's theory that is often overlooked according to Wadsworth (2004: 30) and one that Papert claims Piaget himself did not emphasise enough (Papert, 1993: xix), which is that of affective development. This includes for example feelings, interests and desires and the influence of these on motivation and selection in intellectual development. Interest in a particular activity or subject is a powerful influence in selection of that activity and therefore the development of schemata (Wadsworth, 2004: 30). Piaget believed this affected all behaviour, for example, a child who enjoys

mathematics is more likely to make faster progress (ibid: 31).

Constructivist education, it could be argued, is often engaging as children are actively involved rather than passively receiving information; it was an objective of the HL2 doctoral project to make the workshops as engaging as possible by making them as participative as possible. However, Gardner (1982: 14) remarks that while 'Piaget's contributions need no defence', in concentrating his research on learning in science and mathematics he might have neglected other important aspects of human cognition that are equally as sophisticated. Such aspects are involved in art, literature and music as well as the area of feelings that represent significant portions of human consciousness (ibid). These areas were considered by the Russian psychologist Lev Vygotsky (1978) particularly in relation to creativity and an exploration of Vygotsky's social constructivism will follow in the next section.

### **2.2.2 Vygotsky and the Zone of Proximal Development**

Vygotsky's work was conducted in the Soviet Union in the 1920s and early 1930s but was not first translated into English until the 1960s (John-Steiner and Cole, 1978: ix) when it became very influential in educational psychology through figures such as Jerome Bruner (see Bruner, 1986) who is discussed later in this section. An important contrast between Vygotsky and Piaget is Vygotsky's emphasis on social interaction in constructing knowledge. Piaget recognised that social interaction played a role in constructing new schemata but he tended to focus more on the internal cognitive aspects of learning (Seifert and Sutton, 2011: 30). However, Vygotsky (1978) focused more on the external social interaction of children as the main driver in learning and it is here that Vygotsky's social constructivism has been particularly significant. A key area where Vygotsky's view differed from Piaget's theories was that Vygotsky believed that learning leads development and this is central to his notion of the Zone of Proximal Development (ZPD) (ibid). In Vygotsky's view (1978: 84), 'Learning and development are interrelated from the child's very first day of life.'

Vygotsky argues that development lags behind learning (ibid: 90) and that looking at a child's current development level represents a retrospective view of their mental development; it will show the 'maturation processes that have already been completed' (ibid: 87). The ZPD characterises the child's potential development '*under adult guidance or in collaboration with more capable peers*' (italics in original) (Vygotsky, 1978: 86). The ZPD has been influential in teacher training programmes in the UK and suggests that pupils can learn more from interacting together than they would alone. It represents how far a learner can push their understanding with the help of a teacher or more able peers beyond what they could achieve on their own (Derry, 2013: 49).

For Vygotsky imitation plays an important role in creating a child's potential ZPD, as children can imitate actions that are well beyond their current development in order to help their development reach its potential through the guidance of an adult or collective activity (Vygotsky, 1978: 88). Vygotsky argued that understanding the notion of the ZPD requires a 're-evaluation of the role of imitation in learning' (ibid: 87), which he felt was not given enough significance in educational psychology at that time. Lois Holzman (2010: 8), in reference to Vygotsky's perspective of learning, has highlighted the importance of imitation in creativity in that it helps children to move beyond their current development and is not just copying in a parrot-like fashion. Rather 'imitation is fundamentally creative, by which I mean that it helps to create the ZPD' (ibid).

For Vygotsky language and symbol systems play an important role in children's development, but he does not present language as an expression of thought but as a completion. The relationship between the two represents a process where thoughts unfold and are established through speech (Vygotsky, 1987: 250). For Holzman this has implications for the ZPD, as a teacher or peer can be the person who helps with or completes for the child, thereby enabling a new speaker/thinker to emerge (Holzman, 2010: 12). This creative development could have parallels to the type of process children went through when making compositions in the workshops for this project, while developing ideas in Audacity, while creating

narratives (for which either the sounds in Audacity or the written narrative might complete thoughts or ideas that began in either domain), while discussing ideas with peers or with teachers or, in phase 3 of the research, when creating scores on paper. In all these examples thoughts are completed by process of articulation using a particular symbol system, be that language, sounds with some symbolic significance created and manipulated in Audacity or drawings and diagrams used in the scores. These usually involved social interaction of some kind in order to complete them if not directly then indirectly through provision and demonstration of the necessary tools.

### **Cognitive Pluralism**

Another part of Vygotsky's theory that is particularly relevant for this research is in his acknowledgement of there being multiple domains of knowledge available for developing individuals (Moran and John-Steiner, 2003: 75). Vygotsky saw that there are multiple psychological tools that can develop in an individual depending, in part, on the culture they live in and activities they engage in. These relate to different complex symbol systems such as 'works of art, writing, schemes, diagrams, maps, blueprints, all sorts of conventional signs, etc.' (Vygotsky, quoted in Moran and John-Steiner, 2003: 75), which can represent different modalities or 'semiotic means' in which mental functioning develops. John-Steiner has called this range of psychological tools 'cognitive pluralism' (John-Steiner, 1995); this notion argues that there are a 'multiplicity of semiotic means' which are formed 'through cultural practices' (ibid: 5). Mental representation can use different forms of symbols, be those language or images, but these develop through social activity (ibid). To illustrate this, John-Steiner gives the example of mathematicians who use different strategies some of which are more analytical and rely on writing and calculations while others are analogous and use visual-geometric means (ibid: 6). He also cites examples of great thinkers who used a number of psychological tools such as Darwin who as well as making notes made a number of tree diagrams over the years to help develop his ideas that were not yet fully formed (ibid: 7).



Of particular relevance to this project is research John-Steiner conducted on children's narratives. This research found that younger children were more likely to rely on visual cuing in retelling a story, while older children used more detailed verbal strategies. It also found that what the children chose to retell was 'representative of their culturally patterned experiences and traditions' (John-Steiner, 1995: 9). Cognitive pluralism is also comparable to Howard Gardner's theory of 'Multiple Intelligences' (Gardner, 1999: 33) and John-Steiner has compared and contrasted the two (John-Steiner, 1995: 10). John-Steiner concludes that the main difference between them is that in Gardner's theory intelligences are based on biology, whereas John-Steiner is interested in examining the socio-cultural aspects of the role of symbols in mental functioning (ibid). However, it should be said that Gardner makes clear in his definition that, as well as from a genetic basis, intelligences arise from a person's 'life conditions in a given culture and era' (Gardner, 1999: 45). This distinction has particular relevance for the HL2 doctoral project because of the impact of cultural exposure on children in primary schools. The children in the HL2 doctoral project had quite different experiences of music in school, some had more opportunities to experience and create music from a range of cultures than others and this appeared to influence their response to the workshops (for example see section 4.3.4).

Gardner (1993: 33) has highlighted that most theories and definitions of intelligence ignore creative abilities, his definition, refined in 1999, sees intelligences as potentials rather than something 'that can be seen or counted' (ibid: 34). Gardner defines intelligence as:

*a biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture (ibid: 34, italics in original).*

This emphasis on potential is interesting as it echoes Vygotsky's view of development in the ZPD. A person has a potential that may or may not be achieved and that depends on the opportunities available to the person within their culture, as well as the decisions made by the person, their families, teachers and others

(Gardner, 1993: 34). Gardner's (1999) theory of Multiple Intelligences (MI) seeks to expand the concept of intelligence so that it includes many different capacities. Gardner was influenced by the theories of constructivist thinkers such as Piaget and the American psychologist Jerome Bruner (ibid: 28), who was influenced by Vygotsky's social constructivism (Bruner, 1986: 71). Therefore, before discussing Gardner's MI in more detail it would be useful to examine Bruner's theories, particularly in relation to Vygotsky and Piaget.

### **Bruner's theory of learning in relation to Vygotsky**

Like Vygotsky, Bruner recognised the importance of human culture and social relations on children's development, viewing education as 'a complex pursuit of fitting a culture to the needs of its members and of fitting its members and their ways of knowing to the needs of the culture' (Bruner, 1996: 43). The term 'scaffolding' was first used in an article by Wood, Bruner and Ross (1976) and is closely associated with Vygotsky's ZPD. Scaffolding refers to an intervention by a teacher that enables the child to achieve a goal that would not be possible if the child was unassisted (Wood, Bruner and Ross, 1976: 90). They explain further:

This scaffolding consists essentially of the adult "controlling" those elements of the task that are initially beyond the learner's capacity, thus permitting him to concentrate upon and complete only those elements that are within his range of competence (ibid).

Bruner (1986: 77) argued that the ZPD could be entered by a child through appropriate scaffolding by a teacher or adult and that Vygotsky showed how the acquisition of language represents an example of this process that is paralleled in all forms of knowledge acquisition (ibid: 78). Bruner (1996: 155) also described three ways in which children develop knowledge, which are through action, imagery and symbolic systems. This has parallels with the multiple domains of knowledge described by Vygotsky, as discussed in the previous section. Originally Bruner (1966) viewed these three ways of representing the world as a progression with individuals more likely to favour symbolic systems as they developed. This could also be compared to the developmental stages identified by Piaget (see

section 2.2.1), who argued in particular that children first developed knowledge of the world through interacting with it using sensory and motor skills. Other forms of representation, such as language, start to develop in Piaget's second stage of preoperational thought (2-7 years) (Wadsworth, 2004:28). However, Bruner (1996: 119) believed that 'any subject can be taught to any child at any age in some form that is honest', which contrasts noticeably with Piaget's stages of development. Additionally, Bruner (1996: 155) later changed his view and no longer saw the three modes of representation as developmental but as 'three ways of capturing those invariances in experience and action that we call "reality"'. Like Vygotsky, Bruner's (1996) constructivism also contrasts with Piaget's in his strong acknowledgement of the influence of culture and social activity on learning.

Many approaches to education have focused on the mode of symbolic systems (a prime example would be in connection with literacy and numeracy) and children's success has been measured in terms of their achievement in this area (Beckman, 2008). However, it could be argued that such an approach fails children who might have greater ability in other modalities, such as those that involve iconic representations using spatial intelligence or the enactive use of motor skills. As Bruner argues:

Talent[... ]is more multifaceted than any single score, like an IQ test, could possibly reveal. Not only are there many ways of using mind, many ways of knowing and constructing meanings, but they serve many functions in different situations (Bruner, 1996:25).

For more children to reach their full potential these other ways of knowing need to be recognised within the schooling system and learning process (ibid).

### **Gardner's Multiple Intelligences**

Although not presented as a constructivist theory, Gardner's work builds on the ideas of Bruner and Vygotsky and, as with cognitive pluralism, is significant for the HL2 doctoral project in relation the concept of the HL scale (see section 4.4).

Gardner (1983) challenged the idea of a general intelligence representing a single ability and originally proposed seven separate intelligences (chosen according to

whether they met certain criteria) that operate relatively independently of each other. The original seven intelligences are linguistic, logical-mathematical, musical, bodily-kinesthetic, spatial, interpersonal and intrapersonal, a list to which he has since added naturalist intelligence (Gardner, 1999: 52). Gardner argues that this list is not exhaustive and other intelligences or sub-intelligences might be found to exist (ibid: 44).

Another important claim of particular relevance from a pedagogical perspective is that 'no two people have exactly the same intelligences in the same combinations' (Gardner, 1999: 45), suggesting that children will have different capacities that will influence how they learn or most significantly for this project, how they create. It also suggests, as Gardner argues, 'that *any* uniform educational approach is likely to serve only a small percentage of children optimally' (ibid: 91 his italics). This means that any approach to teaching needs to take into account differences in the way children process information, solve problems and work creatively, in other words what Gardner calls a more 'personalized education' (ibid: 92).

Gardner is keen to make clear that these intelligences should not be confused with particular domains or disciplines, several intelligences might be important for a particular discipline. Additionally these intelligences are potentials, so just because a person has a particular intelligence does not mean they will be strong in a particular discipline with a related name (ibid: 83). The theory of MI does receive criticism that there is inadequate evidence to validate it (see Waterhouse, 2006) and opposition from psychologists who support more traditional psychometric measures of intelligence such as IQ tests (see Gottfredson, 2004: 37). Although Gardner's theories remain influential they are contested by some (such as Gottfredson) who, while acknowledging that pupils will have a variety of abilities, argue that this is still related to a general form of intelligence (ibid). It is argued that this type of intelligence, which encompasses strong reasoning and analytical skills, is what is required to progress with a subject such as science.

However, Gardner claims that MI is supported by growing evidence from neuroscience (ibid: 99) and Gardner's views have similarities with those held by

other leading educational thinkers such as Ken Robinson who describes human intelligence in terms of its diversity (Robinson, 2009: 46). It is interesting to note that the schools that have embraced MI most fully are often ones that value the arts (Gardner, 1999: 109). This might be because, for example, science subjects clearly require high levels of logical-mathematical intelligence for success (as well as other intelligences), whereas arts subjects might more easily exploit a wider variety of intelligences, although that is not to say that many aspects of science too could not be taught creatively by activating different intelligences. It is clear that art subjects could require combinations of the different intelligences, for example, a successful composer of sbm would require more than strong musical intelligence, they also might find it useful to have linguistic, logical-mathematical, spatial and bodily-kinesthetic capacities, which would of course depend partly on the type of sbm and how it is produced.

Creativity is also afforded a more prominent position in constructivist theories as well as in the theory of MI. The ZPD can be characterized as something that is '*actively and socially created*' (Holzman, 2010: 5, italics in the original) and can be thought of as a process involving activity rather than a zone or space (ibid). Holzman argues that this puts creativity at the centre of the concept of the ZPD, as the ZPD is created through social interaction either in a dyadic sense or more collectively (ibid). As creativity played a central role in the children's activities in this research, it is therefore essential to look at its relationship with constructivism in more depth.

### **2.2.3 Constructivism and Creativity in Education**

In a report from 1999 provided by the National Advisory Committee on Creative and Cultural Education (NACCCE) creativity was given a 'democratic definition' that recognised that, given the right conditions and having acquired the right skills, 'all people are capable of creative achievement in some area of activity' (NACCCE, 1999: 29). The report later

defines creativity as, 'Imaginative activity fashioned so as to produce outcomes that are both original and of value' (ibid: 30).

Fautley and Savage (2007: 9) claim 'there is no axiomatic link inherent between constructivist views and creativity', but they do they recognise a close connection as highlighted by Craft, *'In a constructivist frame, learning and creativity are close, if not identical'* (Craft, quoted in Fautley and Savage, 2007: 9, italics in original).

Additionally, Bruner (1986: 97) argues:

And constructivism is nowhere more compelling than in the psychology of art and creativity. Blake, Kafka, Wittgenstein, and Picasso did not find the worlds they produced. They invented them.

Also, it is interesting that creativity is described as an activity in the NACCCE report, which suggests that constructivism is an appropriate educational approach for creative projects as it is by definition active. Constructivism also proved to be appropriate for the creative work in this project as a constructivist curriculum is child centred rather than subject centred and when focused on music composition this results in 'diversity and difference in children's musical worlds' (Burnard and Younker, 2004: 60). This is something that was evident in the HL2 doctoral project as the children demonstrated different approaches to composition.

### **Defining creativity**

An inclusive definition is also given in the NACCCE (1999: 28-29) report that differentiates between 'élite' and 'democratic' definitions of creativity, this relates to recent discussions on creativity that distinguish between 'big-C' and 'little-c' creativity (Craft et al, 2001; Kaufman, 2009) or make a distinction between 'sublime' creativity (i.e. works that become widely acclaimed and recognized in the external world) and 'everyday' creativity (creativity that exists in everybody but to different degrees) (Cropley, 2001: 10). Similarly, Margaret Boden differentiates between 'H-creativity' (a valuable idea is H-creative if no one in history has had it before) and 'P-creativity' (a valuable idea that could not have occurred in that person's mind before but is not necessarily novel in human culture) (Boden, 1994:

76). Boden (2010: 30) also argues that creativity 'isn't confined to a tiny elite: every one of us is creative, to a degree'. The HL2 doctoral project was mainly concerned with fostering everyday creativity in children. The type of creativity referred to by Holzman (2010: 6) is not necessarily novel or original, but everyday creativity created through social interaction in which play can be central and that leads to the creation of the ZPD.

### **The importance of play**

The necessity of play in creative music education is supported by studies into children's use of technology for music composition, where experimentation and exploration were shown to be important (Nilsson and Folkestad, 2005; Savage and Challis, 2002). Play and experimentation were an important part of creative activity throughout the HL2 workshops and Vygotsky saw play as important factor in development (Vygotsky, 1978: 101), but stressed its importance particularly in relation to preschool development (ibid: 102). However, Holzman (2010: 14) argues that it can be important in development across a lifespan and that play and creativity become less valued and celebrated by education systems as children get older meaning that important elements of creating ZPDs are absent (ibid: 15). It is in programmes outside of the conventional curriculum that environments where learning can lead development are created, for example, learning to put on a play, or dance or a take part in a new sport (ibid). Imitation and completion (in the Vygotskian sense) are often essential to the type of learning involved in such programs. As Holzman (ibid: 15) argues, 'The presumption is that how one becomes an actor, music producer, musician, dancer and athlete is by doing what others do and building on it'.

Such environments as the ones described by Holzman allow creative playing; similarly this research introduced a program into schools outside of the curriculum that tried to foster an environment where play and experimentation were encouraged. Often imitation (of tutors' examples or the work of peers) and completion (for example suggestions and help for completing a sonic transformation or building a gesture) played a significant role in the process

whereby children not only created sound compositions, but also it could be argued, widened their own ZPDs through these activities. This also highlights the social aspects of creativity, as by definition the ZPD cannot be created by an individual in isolation. To Vygotsky creativity provides a lifelong ZPD that allows people to learn from and add to their cultures (Moran and John-Steiner, 2003). Vygotsky not only recognised creativity in great works '*but also everywhere human imagination combines, changes, and creates anything new*' (Vygotsky, his italics, quoted in Smolucha, 1992: 54), a view obviously in line with the recent distinctions between sublime and everyday creativity.

### **Intrinsic and extrinsic motivation**

Csikszentmihalyi (1996: 107) talks about creative activity as something that creative people do because they enjoy it and play is also characterised by a sense of fun and of discovering something new. Csikszentmihalyi describes this experience as 'flow', which is 'an almost automatic, effortless, yet highly focused state of consciousness' (ibid: 110) in which the activity becomes autotelic. This means that one will engage in the activity for the pleasure of doing it rather than for an external reward (ibid: 113). The activity is then intrinsically motivating, as described by Deci and Ryan (1985), as it is not motivated by external rewards or punishments, which are extrinsic motivations. Intrinsically motivating activities fulfil innate needs for competence and self-determination requiring the use of creativity and resourcefulness (ibid: 32). Such activities represent challenges that are suited to a person's competencies (ibid). Play is always self determined (ibid: 122) and involves challenges that are not too difficult as to cause anxiety and not so easy as to cause boredom. As Deci and Ryan (ibid: 122) argue, a characteristic of play is the absence of goals as play is enjoyable in its own right, in other words it is what Csikszentmihalyi describes as autotelic.

Similarly, Amabile and Pillemer (2012: 8) propose that intrinsic motivation is an extremely important determinant of creativity whereas extrinsic motivation can have a negative effect, although growing evidence suggests this is not always true, as argued by Fautley and Savage (2007: 10). It might depend on the type of



extrinsic motivation and how this is balanced with fostering intrinsic motivation. For example, evaluation might not always be appropriate for creative work as some studies have demonstrated that it can have a negative effect on creativity (Amabile, 2012: 8). Therefore, the HL2 doctoral project did not involve any evaluation of the compositions produced by the pupils so as to avoid inhibiting their creativity, play and experimentation.

### **Play and combinational creativity**

As Smolucha (1992: 51) outlines, for Vygotsky play in younger children is a process by which children often combine different impressions from their experience and rework them into new realities, making play a creative activity rooted in combinatory imagination. This creativity reaches higher levels as inner speech develops. One of the forms of creativity identified by Boden is that of combinational creativity which involves the 'unfamiliar combination of familiar ideas' (Boden, 2004:3) and is probably the most common form of creativity. It has similarities to the type of creativity that emerges through play from the combinatory imagination described by Vygotsky. It could be argued that the skills needed for combinational creativity are first developed in childhood through the process of play and in Vygotskian terms become more directed as inner speech develops. Similarly, the NACCCE report stressed the connection between imagination, play and combinational creativity:

Imaginative activity is a form of mental play — serious play directed towards some creative purpose. It is a mode of thought which is essentially *generative*.... Creative insights often occur when existing ideas are combined or reinterpreted in unexpected ways or when they are applied in areas with which they are not normally associated (NACCCE, 1999:31).

This active relationship between play and the imagination is something that this research provided space for in order to develop sound-based compositions. Children frequently engaged in types of combinational creativity, not only by combining sounds but also by linking ideas, impressions and memories through the themes or narratives that they created for their compositions. As Fautley and

Savage (2007: 106) argue, playing with ideas and different combinations is a necessary part of 'little c' creativity.

### **The importance of creativity in education**

The importance of creativity seems to be central to many of the theories that underpin constructivist approaches, yet teachers involved in this research often welcomed the chance to participate in the workshops on the grounds that children often do not have many opportunities to engage in creative activity in school (see Hallgarten, 2014: 33). This has been a concern highlighted since the millennium (see NACCCE, 1999; Robinson, 2001) and more recently by the Warwick Commission (see Neelands et al, 2015:47) as well as by the Office for Standards in Education (Ofsted, 2012) in relation to using technology to promote musical creativity in schools.

In the Ofsted report 'Music in schools: wider still, and wider' (2012), active engagement with musical sound and listening as well as using technology to promote creativity and widen inclusion were highlighted as priorities for musical education in schools. Similarly, the Warwick Commission (Neelands et al, 2015) report on the 'Future of Cultural Value' called for 'A world-class creative and cultural education for all to ensure the wellbeing and creativity of the population' (ibid: 42). It stressed the importance and value of encouraging creativity for all children in the education system and that countries in Asia are currently considering ways to focus education more on creativity as well as culture and enterprise (ibid: 45).

### **2.2.4 Summary and conclusion**

This section has explored the key constructivist theories and related ideas that underpin the workshops devised for the HL2 doctoral project as well as providing some support (through cognitive pluralism and MI) for the concept of the HL scale that was developed from the HL2 data (see section 4.4). It has also considered the importance of creativity in education and how that relates to constructivist learning. Piaget's theories are important in putting the pupil at the centre of

learning in suggesting that it is through a learner's exploration and engagement with the world that knowledge is constructed. Vygotsky's and Bruner's emphasis on the key role of social and cultural factors in learning are also significant. Exploration, experimentation and the sharing of ideas were important aspects of the HL2 workshops. Additionally, the recognition that there are different forms of knowing and intelligence as argued by Vygotsky, Bruner and Gardner are interesting in relation to the different pathways taken by children in composing their pieces in the HL2 doctoral project.

It is clear from examining these related theories that constructivist education is not simply 'learning through doing'. Guidance, social interaction and an understanding of the differences in the way people learn are important to enable understanding on a deeper level rather than surface learning. Constructivist approaches will often encourage questioning from the students and use problem solving exercises so that students can apply and deepen their knowledge (Scott, 2006: 19).

Everyday or 'little c' creativity (Craft et al, 2001; Cropley, 2001) can often involve aspects of problem solving especially in relation to music composition (Burnard and Younker, 2004). The value of and need for this kind of creativity within wider education is also recognised by many leading educational thinkers (Craft and Jeffrey, 2001; Robinson, 2009;) and in recent reports (Neelands et al, 2015; Crossick and Kaszynska, 2016). The priorities and goals stated in these reports are clearly in line with the constructivist aims of the HL2 doctoral project and other initiatives that aim to help teachers use the potential of new technology in creative and innovative ways (for example see Loveless et al, 2006). In particular, the HL2 doctoral project takes inspiration from a number of projects that have often used new technology to help young people encounter music not usually included in conventional music curricula. These projects will be explored in the following section.

## **2.3 Sound-based music (SBM) and Education**

Pamela Burnard (2012: 246) makes a distinction between two key pedagogical approaches in relation to musical creativity and the instrumental use of digital technology. One approach views the two 'as separate, unrelated concepts', while the other views them as part of inseparable strategies that feed into each other. With this second approach creativity and technology are interrelated tools that create opportunities for both teachers and learners in 'the creating, receiving and producing of music' (Burnard, 2007: 38). The HL2 doctoral project is led by the second approach that Burnard mentions, as this promotes an open view of music education where non-traditional forms of music that are supported by digital technology, such as sbm, can be explored. It is also influenced by pedagogical approaches from the soundscape tradition that are concerned with the importance of developing listening skills, which predate the digital era but are still influential in sound-based music education today. This section will examine initiatives that have informed this research involving sbm using digital technology in educational contexts as well as those where there is an emphasis on listening and an awareness of the acoustic environment.

Many of the projects that have introduced sbm into schools have involved active participation on the part of the pupils and are informed by constructivist approaches to education, which is also an influential pedagogical philosophy for this research. There are a number of projects that have involved composition (such as Higgins and Jennings, 2004; Savage and Challis, 2002; Martin, 2015) while some, particularly those that are part of the Soundscape tradition, emphasise listening skills. Some such as Wolf (2013a) and Therapontos (2013), incorporate listening and creative practice, but also focus on developing a conceptual understanding. The EARS 2 (Landy et al, 2013) project has a holistic approach by combining listening, understanding and composition and provides specially designed software (Compose with Sounds) for this purpose. What follows is an overview of these and other key projects that involve sound-based music and education that have informed the HL2 doctoral project.

### **2.3.1 SBM and education at De Montfort University**

There have been a number of projects that have been influential on the HL2 doctoral project that have been based in the Music, Technology and Innovation Research Centre at De Montfort University. There is a history of research in the department that investigates access to sbm (for example the Intention/Reception Project [Weale, 2005; Landy, 2006]) and in particular the role education can play in helping this type of music reach a wider audience (Holland, 2011; Wolf, 2013; Therapontos, 2013; EARS 2). These projects laid the foundations for the HL2 doctoral project and some of these initiatives and their significance for the HL2 doctoral project are discussed below.

#### **The Heightened Listening (HL) Project (Holland, 2011)**

The heightened listening (HL) project investigated the potential for widening access to electroacoustic (E/A) music (which is another term commonly used for describing forms of sbm) through learning heightened listening skills. It built on the Intention/Reception (I/R) project, which demonstrated that a significant percentage of inexperienced listeners can appreciate E/A music, particularly when real world sounds are used as material (Weale, 2006: 196).

The HL project proposed that learning heightened listening skills can make the appreciation of E/A works that include real-world sounds (particularly soundscape pieces) more likely. While it was not thought that inexperienced listeners could acquire this level of skill in a short period, the project aimed to investigate if simply raising their sonic awareness (beginning a practice that might develop over time) would influence their appreciation.

#### ***Methodology***

The goal of the HL project was to investigate whether, over the course of two workshops, raising aural awareness would increase appreciation for inexperienced listeners in schools. As with the I/R project it used largely qualitative questionnaires to solicit data but also incorporated triangulation into

this process. Triangulation, which is often used in action research, ‘allows information to flow between the maker and ‘taker’ .... allowing us to investigate whether that which is intended and received meet adequately’ (Landy, 1999: 68). A soundscape piece was composed as test material, which was reworked based on case study feedback from the different groups to investigate whether triangulation would produce a more accessible work. As a reference, similar tests were proposed with blind or visually impaired listeners to investigate how they, who through daily practice should already possess a heightened sense of listening, would respond to the same work. After running beta tests workshops were organised in four separate schools.

***Results: The influence of aural awareness on appreciation***

One of the central questions the research tried to answer was the effect of increased sonic awareness on appreciation. As shown in the table below, overall three quarters of participants felt the listening exercises aided their ability to listen closely.

<b>YES (listening exercises helped)</b>	<b>NO</b>	<b>UNDECIDED</b>
75%	22%	3%

**Responses to the question** - Do you think the listening exercises in each session have helped you to listen more closely to the sounds?  
(Holland, 2011:101)

***Results: Future access to sound-based music***

Questions concerning future access were central to the project because if participants do not want to listen to this type of music again then heightened listening could not be presented as an effective access tool. At the end of the workshops 66% answered positively to whether they would like to listen to sound-based music in the future and the majority of these also said they found the listening exercises helpful (Holland, 2011: 105).

### ***Extending heightened listening through greater participation***

Conversations with teachers, as well as observing the loss of concentration among some listeners during the workshops, indicated that the results could have been more convincing given extra time and greater participation. Some of the responses also demonstrated an interest in being involved creatively with sbm and narrative emerged as a theme in explanations for positive responses.

### ***Final Conclusions from the HL project***

The overall results indicated that raising aural awareness through listening exercises can enhance the appreciation of real world sound-based music. In addition, the connection between sonic awareness and appreciation appeared to be highlighted in the overall data and individual responses.

The HL project therefore laid the foundations for the HL2 doctoral project where participants were helped to develop heightened aural awareness as part of creative practice that incorporated the use of imagination and narrative.

### **Sound-Based Music in the Public Schools of Cyprus (Therapontos, 2013)**

This was a PhD project run by Nasia Therapontos and was concerned with creating a sound-based music curriculum for implementation in public schools in Cyprus (Therapontos, 2013: 1), which it was hoped would be adopted as part of Cyprus's National Curriculum for Music. The research used a grounded theory approach through multi-site case studies in order to develop lesson plans for teachers that focused on sbm. The research was aimed at children between the ages of 9-14 years old and hoped to 'minimize the accessibility gap that exists between sbm and the wider public' by introducing the music earlier in the students' lives (Therapontos, 2013: 13). The lessons aimed to develop listening skills, introduce some of the important concepts of sbm and help the children produce some of their own compositions (Therapontos, 2012: 4).

The research found that students of this age group can learn to appreciate sbm, through the lesson plans that were designed. It provided teachers with a

curriculum that it was possible for them to deliver with 'minimum supervision' (Therapontos, 2012: 4). For the participants it had the result of:

Enhancing their musical creativity, providing an inclusive environment in the classroom, as well as providing a sense of freedom to the students and enjoyment in the music lesson (ibid)

This project focused on a higher age range (9-14) than the HL2 doctoral project but there is an overlap (the HL2 doctoral project included pupils from 7-11 year olds). It also looked at implementing such lesson plans in the Cypriot education system as opposed to the UK focus of HL2. However, there are clear similarities with the principal objectives of the HL2 doctoral project and the results have informed the methodology. For example, it found that children can appreciate and compose this type of music with appropriate support and that teachers without much prior experience of the music can deliver the lessons (Therapontos, 2013: 230). It also showed that raising aural awareness through activities such as soundwalks can help promote active listening (ibid: 227). Students were asked in one activity to create sound stories in groups made from sounds they had brought in from home, these performances were recorded and in a later lesson the children had the opportunity to manipulate and edit them using Audacity (ibid: 100). Therefore this research supports the main aims and methodology of the HL2 doctoral project by demonstrating that creative practice and raising aural awareness can help children engage with sbm.

### **The Appreciation of Electroacoustic Music in Key Stage 3 Students (Wolf, 2013).**

Motje Wolf's PhD research focused on the influence of teaching on the appreciation of electroacoustic music for Key Stage 3 pupils. This research created the first prototype for the EARS 2 online resource that will be discussed in the next section. A curriculum was developed to introduce pupils to electroacoustic music through concepts such as music using real-world sounds and music using generated sounds (Wolf, 2013a: 292). This curriculum was presented as an online environment and as a teacher's handbook (Wolf, 2013b: 124). This was tested in a large-scale study



involving lessons in four schools in Leicester. Data was collected using qualitative questionnaires, a listening response test and a summary of the experience written by participants in the form of a letter (ibid).

The workshops were divided into five lessons with different foci. The first lesson involved a listening quiz to help the pupils distinguish between real world and generated sounds while the second lesson involved developing listening skills for different musical parameters (for example pitch, duration, rhythm). The third and fourth lessons featured two options for the children to learn and compose pieces for either the soundscape or musique concrète genres. The children had the option to record some sounds and then create their own compositions or create a role play in connection with one of the genres. The final lesson dealt with the presentation of compositions and the collection of data (Wolf, 2013b: 129).

The results found that the children's learning resulted in an enhancement in their appreciation of electroacoustic music. It was found that listening training played an important role in this (ibid: 132). The participants were taught different listening strategies used in electroacoustic music such as referential and reduced listening, they were able to distinguish between these strategies and apply them (Wolf, 2013b: 132). This listening training was more important in enhancing appreciation than had been initially expected. 50% of those who took part said that the listening training changed the way they heard sounds (ibid: 130).

This was an important research project that provided much of the initial framework that was needed to develop the EARS 2 project. It also further demonstrated the key role of listening skills in the appreciation of electroacoustic music. However, whereas this project introduced different approaches to listening, the HL 2 project concentrates on the development of a heightened listening strategy to aid in the composition of sound-based music. Additionally, the HL 2 project focuses on Key Stage 2 pupils rather than Key Stage 3.

## **EARS 2**

The idea for the ElectroAcoustic Resource Site 2 (Landy et al, 2013) developed out of the original EARS site, which had been intended mainly for university students and specialists as 'a means of sharing knowledge regarding terminology and published research in electroacoustic music studies with students and specialists alike' (ibid: 110).

EARS 2 was originally intended as a pedagogical site for young people, however it was decided to extend this and develop 'an entire pedagogical environment introducing primarily, although not exclusively, children aged 11 to 14 to electroacoustic music' (ibid: 108). The project not only aims to introduce young people to the concepts and music itself but also to creative practice, which is facilitated by the software package 'Compose with Sounds' that has been designed especially for use in education. One of the aims of the site is to challenge and support children in their learning and is based partly on constructivist principles balanced with a more cognitivist approach (Landy et al, 2013: 108). It was decided, after reviewing what educational resources were internationally available for electroacoustic music, that what was needed was a full scale pedagogical project for students and teachers to provide a comprehensive virtual learning space that 'would integrate social networking with personalised access to resources and tools for creative practice' (ibid).

EARS 2 favours a holistic approach to music education, which in practice means a concept can be introduced while simultaneously demonstrated using examples from the repertoire and in exercises using the Compose with Sounds software (ibid: 111). This reflects the emphasis on three main areas in EARS 2, which are understanding (key concepts related to the music and technology), listening (repertoire) and making (creating work using Compose with Sounds) (ibid).

The EARS 2 team took the view that the site should work in a similar way to a computer game in that there are different levels, meaning that the more an individual achieves on the site the more content is available to them (Landy et al, 2013: 112). The idea is that this will act as an incentive for learners to develop

skills and knowledge. This is also applied to the software where users graduate through different levels in which they are introduced to ever more sophisticated manipulation tools (ibid).

One of the most important aims of the site was to support teachers who might not initially be very comfortable with the subject area in educating their pupils in the concepts, repertoire and compositional techniques of electroacoustic music (ibid: 116). The site gives teachers the opportunity to learn about these areas themselves before working with their students and teacher packs will be available for all the modules in EARS 2. Additionally, there is also a book by Leigh Landy (2012) called 'Making Music with Sounds' that is associated with the EARS 2 project and has been written specifically for teachers (Landy, 2013: 116).

EARS 2 is an ongoing international project that is partly funded by the EU and is closely connected to the objectives of the HL2 project. It is likely that it will further develop in new and exciting ways offering opportunities for users to network, collaborate and even incorporate live performance (Landy et al, 2013: 121). However, its holistic approach distinguishes it from the HL 2 project, which primarily focuses on developing an imaginative aural awareness as part of creative practice. Additionally, the HL2 project focuses on a younger age group than the one primarily aimed at by EARS 2.

### **2.3.2 Other projects involving SBM and education**

There are a number of examples that support the effectiveness of a constructivist approach for projects involving SBM and education, those of particular relevance to the HL2 doctoral project are reviewed in this section.

#### **A constructivist approach to making electroacoustic music accessible to young listeners (Higgins and Jennings, 2006)**

Anne Marie Higgins and Kevin Jennings investigated the effectiveness of a constructivist method for widening access to electroacoustic music in research with 16-year-old secondary school students in Ireland. Their hypothesis was that

by engaging in composition the students would become more informed listeners to electroacoustic music in general (Higgins and Jennings, 2006: 179). The research found that the participants were capable of producing pieces of electroacoustic music using the tools and processes commonly applied in this kind of music. The whole experience also enabled them to relate more meaningfully to electroacoustic music in general. Additionally, it indicated that working collaboratively was beneficial to the students in gaining insights about the music. The activity of discussing and articulating their thoughts about the compositions helped them to develop their perceptual skills laying the foundation for future listening (Higgins and Jennings, 2006: 186).

A key feature of constructivism is that social activity and shared enquiry are an important element of learning (Scott, 2006: 17). In the HL2 doctoral project children often worked on their compositions individually but many of the activities were in groups and discussion was encouraged particularly when pieces were played to the whole class in the final workshop. The Higgins and Jennings project was particularly significant for HL2 doctoral project as it showed that through engaging in composition school children could relate more fully to electroacoustic music. However, its investigation was concerned with 16-year-old pupils, therefore significantly older than those who have participated in the HL2 doctoral project.

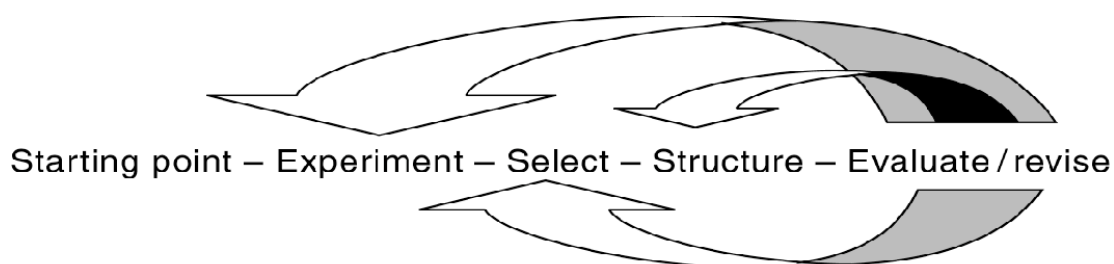
Additionally, Higgins has created an online resource (see <http://www.organisingsounds.com>) for secondary school pupils through which they can download and upload sounds to make compositions, learn about how to structure pieces and upload finished pieces to share with others.

### **Reflecting Others (Savage and Challis, 2002)**

There are other examples in the literature of how such a practice-based collaborative model might work. For example, Savage and Challis describe their research involving secondary school pupils and young offenders in a collaborative digital arts project using sonic and visual materials (Savage and Challis, 2002). They make interesting observations about how the students worked with new

technology and how their views on using technology for sonic compositions developed through the process. It was also interesting that the technology stretched and challenged the participant's imaginations empowering them to express themselves and communicate their feelings in new ways.

The project used a simple five-stage composition process derived from discussions with electroacoustic composers (see Figure 2.1)) that provided a framework for the way the students worked, which has also been a useful reference for this research.



**Figure 2-1 Five stage framework for electroacoustic composition (Savage and Challis, 2002: 11)**

Although, as pointed out by Burnard, it is important in music education to allow learners to develop their own values and ideas rather than being restricted by pre-defined models (Burnard, 2000:21), the process devised by Savage and Challis provides children with a useful framework that was integrated into the HL2 methodology to help guide and facilitate creative practice.

As explained by Savage (2005: 172) the framework allows pupils plenty of freedom to decide the focus of their compositional work, which was an important factor in the design of the HL2 doctoral project. Using this framework children first come up with creative starting points, after which they experiment with sound material and then select and structure this material. Savage (2005: 173) stresses how important the experimentation stage of the framework was in the Reflecting Others project for allowing pupils the opportunity for 'playful exploration', which sometimes resulted in important compositional developments. This supports the value of exploration and play that is suggested in constructivist theory and proved

so important in the HL2 workshops, as discussed earlier (see section 2.2).

Although the framework suggests composition to be a linear process, the final evaluation and revision enables pupils to revisit any stages to make changes that are necessary, making this 'loop back' a very useful and important part of the process (Savage and Challis, 2002: 11). It also supports a complex non-linear view of learning as proposed by this research and fundamental to its methodology as discussed in chapter 3.

Additionally, this 'loop back' relates to the concept of 'divergent thinking'. This is thinking that is non linear with 'no specified linear route to a predetermined ending' (Fautley and Savage, 2007: 2), which allows the thinker considerable freedom. It therefore requires some autonomy so that resulting ideas can be put into practice. Autonomy is an important factor in establishing intrinsic motivation (as described in 2.2.3) and allowing the pupils to have some autonomy over their work was also central to the approach taken in the workshops for the HL2 doctoral project.

### **Sound.Son**

This is an online (<http://music.columbia.edu/soundson/intro.php?lang=english>) educational and collaborative sound project that has been running since 2001. It allows participants from different countries to exchange sounds and create a sound composition together. The exchange does not happen in real time thus enabling the composition to develop over a period of time. The educational side of the project has involved collaborations between schools from separate countries enabling children from different cultures to exchange sounds and create compositions. It gives students the opportunity to 'communicate through the medium of sounds, rather than language' (Sound.Son, n.d.).

On the website composition activities are divided into two separate stages. The first stage is where the students record and share sounds, this is where listening plays an important role. The website describes the significance of this stage in these terms, 'By exploring their own and other sound worlds students discover the

representative and expressive qualities of sound' (Sound.Son, n.d.). In the second stage participants start to exchange composed fragments that then grow into a longer collaboratively assembled composition. This process helps them to discover ways in which sound can be organised especially through the use of montage.

As with the HL2 doctoral project where benefits for subjects beyond music such as English and ICT have been identified, the benefits of Soundson are also multidisciplinary covering music, technology, culture and the environment. Groups that have participated include 12-13 year old children from schools in Leicester and Lansargues in France. The emphasis of this project is on participants discovering their own and other sound worlds through creative practice. It is intended that by engaging in these collaborative compositions they will also learn the techniques for creating sound works. This has much in common with the constructivist view of education that underpins the HL2 doctoral project and provides a useful online resource for children to learn about different soundscapes creatively.

### **Investigating children's approaches to sbm composition in Canada (J. Martin, 2015)**

Jeff Martin has conducted research (as yet unpublished) that is of particular interest in relation to the HL2 doctoral project. Martin (2013) has previously conducted research in relation to sbm in educational settings with middle and secondary school pupils and written about the 'gap' that exists between E/A music practice and the school curriculum.

The recent study used a qualitative case-study approach to examine approaches used by some Grade 7 (12 year olds) students at a school in Canada in relation to composing sbm. The project involved researcher-led sessions where sound-based music and composition techniques were introduced, which was followed by supervised individual student composing in a computer lab. Interestingly the research focused on the composition process of three individual students. Data was provided through observation, interviewing and the analysis of work saved by

each student in Audacity throughout the composition process. This provided detailed profiles of three students' approaches to, and perspectives on, sound-based composition.

Students were permitted to create sound pieces using up to six sounds with a length of about one minute. Prior to this the students learnt about editing and processing techniques in Audacity.

The results revealed deep engagement with the compositional process. The students favoured a 'bottom up' approach (Landy, 2012: 53) to composition by experimenting with sounds through trial and error and by using their musical intuition. 'Bottom up' composition is where the structure of the work emerges from experimentation with the sounds rather than organising materials according to predefined structural principles. The students did not feel the need to associate the sounds with a narrative and their work seemed to be guided by structural features from note-based composition. All of the students involved found unexpected satisfaction in the experience and expressed an interest in creating sound-based pieces on their own.

The children were slightly older in this study than in the HL2 doctoral project and, although some listening training was provided, the emphasis was on composition. The close focus on the children's compositional process is interesting as collecting such detail on this has not usually been the main aim of other studies in this field. Additionally, this focus has parallels with phase 3 of the HL2 doctoral project (see section 4.4), which involved collecting data from a small sample of pupils on their approaches to composition in relation to the HL scale. The freedom given to the children in relation to the compositional task in Martin's study is also similar to the HL2 doctoral project. The results of this study appear to support the HL2 findings that this age group can find sound based composition engaging and that allowing autonomy helps to facilitate that engagement.

The projects outlined above are all recent projects that involve the use of digital technology as a creative tool for composing sbm. However, the HL2 doctoral



project also draws on theories and practices developed as part of the soundscape tradition that emerged in Canada in the late 1960s before the widespread availability of digital technology. The next section will discuss some of the ideas used in soundscape education as well as how they have been applied in more recent projects.

### **2.3.3 Soundscape music and education**

R. Murray Schafer, one of the leading figures in founding the World Soundscape Project (WSP) in the 1960s, noted the dominance of the visual in society and that in his experience children's listening skills were deteriorating (Wrightson, 2000: 10). Schafer argued passionately that listening skills should be part of the national curriculum (Wrightson, 2000: 10). The types of ear cleaning exercises, which were outlined by Schafer in a number of music education pamphlets (Schafer, 1986) and designed to make the listener focus on and notice the sounds around them, were of central importance in opening the ears of the children involved in the HL2 doctoral project.

Soundwalks (which involve walking through a particular environment while focusing on listening as discussed later in section 2.4.2) have been an important tool in education projects involving acoustic ecology. Recent projects that involve soundwalks include the Soundwalking Interactions project (see McCartney and Paquette, 2012 and the website <http://soundwalkinginteractions.wordpress.com/about/>) run by Andra McCartney based in Concordia University in Montreal, Canada. This is an ongoing research project that aims to raise awareness of and engage people with various locations through listening and walking. It is a community-based project in which anybody can participate so is not aimed specifically at children and soundwalks are organised both in Canada and internationally. It demonstrates the continuing importance and development of the soundwalk as a tool to facilitate engagement with the acoustic environment.

Schafer's ideas on education are still very influential as evidenced by a themed edition of 'Soundscape: The Journal of Acoustic Ecology' in 2001. This included a number of examples where Schafer's techniques are still being used successfully in education. Michael Cumberland, a teacher in Canada, describes the value of these techniques in developing listening skills after using them with a wide range of age groups from elementary to High school level (Cumberland, 2001: 16). His use of listening lists, which he asks pupils to compile first individually then collaboratively as a class, have been a useful reference in helping to develop the listening exercises used in the HL2 doctoral project (Cumberland, 2001: 17).

### **Exploring Sounds with Children on the Isle of Lewis (Wagstaff, 2001)**

This was part of a project on the Isle of Lewis in Scotland described in the same issue that aimed to 'describe and document the social, cultural and natural make up of the islands through their soundscape' in a process that would involve the local people (Wagstaff, 2001: 30). Wagstaff arranged a 2-day workshop with children between the ages of 8-12 at a local primary school in order to 'engage the children in listening *to* and thinking *about* their soundscape' (ibid)(his italics).

Wagstaff began by playing them recordings of different soundscapes from around the world and asking them to describe what they thought the sounds were and how they made them feel. The purpose of this was 'to open and focus their ears and their imagination' (ibid). This activity was followed by an outdoor listening and sound mapping exercise where the children were encouraged to produce a map of their acoustic surroundings (with them at the centre), which also included details such as the direction of sounds. They were also asked to produce sound lists in certain categories such as 'sounds I like ' or 'sounds I dislike' which eventually grew into a large collective conceptual map of lists documenting the individual sound worlds of the children who took part (Wagstaff, 2001: 31).

Wagstaff asked them to keep sound diaries and also write a piece of poetry before the next workshop with him. The teacher kept their listening training going while Wagstaff was absent, for example by taking them on listening walks. When Wagstaff returned he was impressed by their efforts, which showed a clear

engagement with imaginatively exploring the sounds around them as shown by the poem below:

The whistle of the wind by my ear,  
The wind blowing against the trees,  
Trees “swish”. Sound is heard,  
Forcing us back. Stopping you hard,  
The wind pushing the sea - CRASH! against the rocks, Moving clouds, in the air,  
*With the calm, comes silence.*

Alasdair Smith (aged 10)

(Wagstaff, 2001:30)

As part of the project the teacher also wrote about her thoughts and feelings about the experience. She was very positive about how it had opened the children’s ears to the sounds around them but how experiencing sound differently through drawing, maps, lists and poetry also had a positive effect on their creativity (Wagstaff, 2001: 32). This project demonstrates how an imaginative exploration of sound can engage children with their sound worlds in a creative way. This is a significant element of the HL2 doctoral project, which has tried to harness this type of exploration of sound as part of a compositional strategy. It also illustrates the significant role a teacher can play in such projects and how their committed support can be crucial in how much the children engage with the listening practice, which has been a significant factor in case studies within the HL2 doctoral project.

### **Stockholm Soundscape Project (McGinley, 2001)**

Another interesting pedagogical soundscape project was organised by Robin McGinley in Stockholm with 15-year-old school pupils. The pupils were asked to participate in a number of activities that aimed to raise aural awareness, document the soundscape and develop their listening skills as well as their creativity. In order to do this they kept ‘sound journals’, created sound maps, made field recordings and conducted interviews with members of the public about their

listening experiences (McGinley, 2001: 28). McGinley hoped that these activities could offer a way into ‘the sometimes “difficult” soundworlds of contemporary experimental and electroacoustic music’ (ibid: 26). The idea was that by allowing the students to creatively explore and research the soundscape, they would be more open to these types of music: ‘if you can encourage people to listen to *everything*, they can listen to *anything*’ (McGinley, 2001: 29).

As with the HL2 doctoral project and is suggested by constructivist learning theories, allowing the pupils to have autonomy and the opportunity to explore were important aspects of the project (ibid: 26). As discussed in section 2.2.3 these aspects are important for creating the right conditions for the cultivation of intrinsic motivation. However, unlike the HL2 doctoral project, the project did not involve a compositional element and this was something McGinley identified as an activity that should be included in future initiatives (ibid: 29). Therefore the HL2 doctoral project is extending the research conducted by McGinley by including more creative elements in order to contribute further to research in this area.

### **Refining children’s aural perception in Greece and Corfu (Etmektsoglou et al, 2008)**

This project was part of the Greek Soundscapes Program and involved young children (7-8 year olds) in Corfu (Etmektsoglou et al, 2008). An acoustic ecology educational program was devised that included listening practice influenced by the work of both Pierre Schaeffer and Murray Schafer (the approaches of both are reviewed in section 2.4). A balance was sought between these two approaches and complimentary aspects of each informed classroom activities. For example, children were encouraged to perceive sounds in relation to their source and environment but also at times to focus on them as sound objects with ‘no referential connection’ (ibid: 3).

In order to help the children with listening to isolated sounds one activity involved creating a narrative context for the sounds. Although narrative was not used as a compositional tool as in the HL2 doctoral project, it is interesting that it was

applied as a useful means of supporting the children's listening practice. The project also included a number of 'sound games' as devised by Schafer to help the children actively explore sounds. Additionally, the children were encouraged to think of the soundscape in both aesthetic and ecological terms and soundscape compositions were introduced to the children for this purpose. One important intention of the program was to make links between sound and 'body movement, stories, games, ecology and all possible subjects of the school curriculum' (ibid: 5).

The aims of this project overlap in a number of ways with the HL2 doctoral project and it also involved a similar age group. However, although creativity played an important role in these activities the children did not record sounds to create their own compositions as in the HL2 doctoral project. Additionally, while there was an emphasis on developing listening skills in the program this was not then applied to recording and compositional work, which is something that makes the HL2 doctoral project distinctive in this field through its application of heightened listening. The recording of sounds by the children was an important aspect of the HL2 doctoral project as this meant the children were using material that was unique to their schools and had relevance to their everyday lives. Making work relevant to the children's lives has been recognised by other research (Burnard and Younker, 2004: 60) as an important part of making music composition a meaningful experience.

### **Soundscapes and Cultural Sustainability - Dollar and Cembra - (2011)**

This was part of the Soundscapes and Cultural Sustainability project that had its origins in WSP research from 1975 that studied the soundscapes of five villages in different parts of Europe. One of the villages was Dollar in Scotland and in 2000 the villages were revisited, as described on the Dollar soundscape blog:

The Acoustic Environments in Change project, led by Dr Helmi Järviluoma from the University of Turku, revisited the villages in 2000 to undertake comparative studies, and at the same time added new community based initiatives and approaches to the soundscape (Dollar soundscape, 2011).

Then in 2011, Dollar and Cembra in Italy were visited again but this time school pupils were invited to produce their own views on the Dollar soundscape, which are presented as part of the blog (<http://dollarsoundscapes.blogspot.co.uk/p/about.html>). The people of Dollar were also invited to share texts, pictures and sounds on the blog. The idea was that the villagers would:

be encouraged to document and discuss the past, present and possible future soundscapes in their villages.... The procedure consists of field recordings and evaluating the environmental sounds, and sharing both of them with the rest of the community and with another European village via the project's website (Uimonen, 2011: 262).

Activities conducted with school children in Dollar involved 'Sound Preference Tests' where they were asked to fill out forms to show the sounds they liked or disliked in Dollar. Also children aged 7 and 8 took part in soundwalks where they made and recorded sounds from crisp packets, railings and plastic bottles, which were then posted on the blog. Another activity involved 10 year olds from the same primary school who took audio recorders home with them to document their own soundscapes. These were then played back to the rest of their class for comments, one important aspect that was noted was how interesting it was to hear one's own voice back through loudspeakers for the first time (Dollar soundscapes, 2011). This has been a recurring theme in the HL2 workshops; children seem fascinated and excited by experiencing recordings of their own and classmates' voices.

This project is heavily influenced by the work of the WSP with its inception being traced back to research conducted by the WSP in the seventies. The scope of the project was expanded from this original research to include community and educational initiatives to encourage local people to learn about their soundscapes (Uimonen, 2011: 262). As demonstrated in the examples above, children were encouraged to engage creatively with sounds in their environments, just as they are in the HL2 doctoral project, although it has not involved the clear compositional element that is included in the HL2 doctoral project.

### **Sonic Explorers (2012)**

This is an Australian project commissioned as part of a green arts event called Treeline. According to the sonic explorers website (<http://www.sonicexplorers.org/about.html>) this event aims to ‘ help children draw the connection between them as the earth's inhabitants and their impact on our planet’ (Sonic Explorers, 2014). The idea for the project was conceived by the composer Leah Barclay and ‘revolves around the creative possibilities of soundscape ecology’ (ibid). It involves a series of workshops where children are encouraged to experience the acoustic environment in new ways, as part of this the children record sounds and make sound maps. Some of the recordings are then shared on the website (<http://www.sonicexplorers.org/listen.html>). This project also recognises the creative potential of soundscape theory and listening practice, however it does not extend this into compositional work as was done in the HL2 doctoral project.

### **2.3.4 Sound and Music (SAM) initiatives**

Sound and Music, which is a national agency for new music in the UK that includes the old Sonic Arts Network, has created a number of educational initiatives relevant to this project. All of these projects were previously reviewed by Therapontos (2013) in relation to sbm and education while two of them (Minute of Listening and Sonic Postcards) were also previously reviewed by Wolf (2013). Below the significant projects (for HL2) are discussed and outlined.

#### **Minute of Listening**

This is a project that was launched by SAM in 2012 that aimed to:

- ‘enable every primary school child to experience the richness and diversity the world of music and sound has to offer
- promote a culture of curious, active and reflective listening in schools

- introduce music and sound as a stimulus for analytical thinking and imaginative enquiry
- create a daily opportunity for experiential learning and conceptual exploration ‘

(Sound and Music, 2012: 3).

The idea of the project was to introduce 60 seconds of new sounds and music (through software provided by SAM) into each school day for the children to hear and discuss (ibid). These aims are all of importance and relevance to the objectives of the HL2 doctoral project, with the particular difference that the HL2 doctoral project had an emphasis on developing general aural awareness (especially of environmental sounds) and using this skill as a compositional tool. The evaluation of the second pilot phase indicated that the project had been a big success and was very popular with pupils and teachers, helping to broaden the children’s experience of unusual sounds and music (Sound and Music, 2012: 3). As part of the project, teachers were provided with training for running a Minute of Listening with their classes. Teachers noted that the project had a significant effect on the behaviour, ability to talk about music and listening skills of the children, as well as their creativity and imaginative abilities (ibid: 4). This is educationally significant as these effects reach beyond the area of music education into other disciplines. As described in chapter 4 the teachers who participated in the HL2 doctoral project also acknowledged that the workshops had benefits in other subject areas such as ICT, English and science and gave the pupils an opportunity to develop creative abilities.

Teachers felt that the Minute of Listening project was appropriate for any age group (ibid: 13) and very valuable as an educational tool (ibid: 14). Many teachers used the project for extension exercises that included drawing pictures and written exercises in response to sounds (ibid: 22), which is similar to the use of written work as a means for exploring environmental sounds used in the HL 2 project.



### **Listen, Imagine, Compose (LIC)**

This was a SAM project with a wide scope that sought to answer a number of related research questions all connected to investigating ‘pedagogies of composing in secondary schools’ (Sound and Music, 2014: 1). As well as aiming to explore pedagogical strategies for creativity and composition the project aimed to research how young people can engage with ‘contemporary experimental music’ (ibid: 2). It aimed to investigate how pupil’s creativity can be assessed while supporting them in taking risks and experimentation. It also intended to research the role of listening and reflection in the creative process (ibid: 3), as well as how ICT can encourage ‘creative and experimental thinking’ (ibid). The different research questions identified by the project were investigated by six separate researchers working on individual case studies with a particular teacher and composer, which altogether formed a ‘meta-case study’ for the whole project (ibid).

As would be expected for a project that involved a number of different case studies and research questions its findings are detailed and far-reaching. Of particular relevance to the HL2 doctoral project was the conclusion that for compositional practice to develop the classroom needs to be ‘a safe space’ for generating multiple ideas (Sound and Music, 2014: 37). It also advocated challenging the students with unfamiliar types of music such as by playing them works from the electroacoustic and live electronics traditions (ibid: 36). Although there are clearly shared areas of interest with the HL2 doctoral project, LIC was not predominantly concerned with sbm and in particular it’s interest in listening was more focused on music than general aural awareness. Additionally, unlike the HL2 doctoral project, it was concerned with Key Stage 3 pupils. However, its success in developing pedagogical strategies for musical creative practice that emphasise the interrelatedness of learning and doing, as well as advocating a ‘safe’ open approach to experimentation in order to aid pupils engagement with more experimental contemporary forms of music, supports some of the similar aims of this project.

### **Sonic Postcards**

This project run by Sound and Music is aimed at children between 9 and 14 years old from the UK and abroad. It allows children to share information about the environment they live in through sound. Participants can record their soundscapes and post them online for other children to experience.

The project is interdisciplinary mixing music, geography and ICT and has so far reached over 4500 children and 400 teachers in 170 schools (Sound and Music, 2014b). It aims to focus attention 'on the impact of sound on our lives, and the possibilities for creativity through the manipulation of sounds with technology' (ibid). There are clear similarities between this project and Soundson (described above) and as with that project it supports the aims and methodology of HL2 in that it hopes to foster a direct and creative interest in the acoustic environment in school children. As with the HL2 doctoral project it also supports the idea that sound-based educational initiatives can have benefits across the curriculum. This particular project aims to benefits music, ICT, geography, English, history, science and art (ibid).

### **City of Rings**

Closely related to Sonic Postcards is the international City of Rings project, this was created by Sound and Music and aimed at children in a variety of countries. As with Sonic Postcards the main goal is to encourage an exchange of information between children about the places that they live through recordings of sounds and compositions that are shared on the Freesound website. These sounds are used for reflection and appreciation and there is a blog where children can comment on each other's work (City of Rings, n.d.). This is another SAM project that supports some of the objectives of this research. The opportunity to reflect and comment through the blog is a useful educational and creative tool. It is also congruent with the creative practice encouraged by the HL2 doctoral project, where children were given the opportunity to comment on each other's work and reflect on how sounds might contribute to a theme in their compositions.

### **2.3.5 Summary and conclusion**

This section intended to provide an overview of the educational context for the HL2 doctoral project. The discussion has included a review of a range of initiatives including work that began in the 1960s in Canada with the WSP and twenty first century research using digital technology through a number of UK and international projects. All of the initiatives outlined above have helped to support and inform the methodology and principal aims of this research. While the projects situated at DMU have been particularly influential, other projects have demonstrated that sbm can creatively engage children not only in the UK but internationally.

What is interesting in a number of these initiatives is how creativity and listening can be effectively combined to capture young people's imaginations. These initiatives have different emphases on listening (and again in terms of repertoire, sonic parameters and awareness of the soundscape), understanding, composition and technology but mostly, to some degree, include all or several of these aspects. Listening and creative practice have been shown in many projects (Wolf, 2013; Therapontos, 2013; SAM, 2012 and 2014; Landy et al, 2013; Higgins and Jennings, 2006; Wagstaff, 2001; Savage and Challis, 2002; McGinley, 2001) to aid engagement with sbm, demonstrating that the particular approach developed for this research has strong foundations established by previous projects.

The HL2 doctoral project builds on the foundations provided by the different projects reviewed in this section with the aim of advancing research in this field by investigating how a combination of listening practice and compositional work influences engagement. Although there are a number of shared elements between the HL2 doctoral project and many of these initiatives, none of them have the same emphasis on using listening practice to support compositional work for KS2 children. In the HL2 doctoral project creativity has been found to be a major factor in facilitating engagement. This has been discovered through collecting substantial data from eight different schools with KS2 children in connection with their experience of composing sbm through developing listening skills. This is central to

what makes the HL2 doctoral project distinctive and how it makes its contribution to knowledge. The next sections will explore listening practices that are common in sbm in order to help define heightened listening and explain why it was a suitable strategy to use in the HL2 doctoral project.

## **2.4 Listening Strategies in Sound-based music**

Leigh Landy has recognised that one of the issues when listeners unfamiliar with sbm encounter it for the first time is that they do not actually know how to listen to it (Landy, 1994: 50). In an article in 1999, Landy described Mark Taylor's concept of 'heightened listening', which relates the experience of the visually impaired to the acousmatic listening situation (Landy, 1999: 67). In this situation sound itself becomes the main focus encouraging listeners to concentrate more closely, which Taylor observed is a skill often more developed among the visually impaired (Taylor himself is visually impaired) as well as regular listeners of electroacoustic music. Central to the HL and HL2 projects is the notion that developing heightened listening skills can aid inexperienced listeners engagement with sbm and in the HL2 doctoral project also support compositional practice.

For the HL project heightened listening was defined as a close concentration on sound that allows external links to be made, which is distinct from reduced listening that actively ignores any external information in order to concentrate purely on the sound itself (Holland, 2011: 7). It was proposed that heightened listening allows shifts in focus between the internal properties of the sound (such as duration, dynamics, pitch, timbre) and external associations (that could be referential or imaginative reflections) depending on which is more appropriate for the listening situation. This means that the sound's internal qualities can be appreciated while not precluding external connections being made through the memory and imagination; indeed, this might be encouraged for particular compositions.

This definition was developed from examining listening strategies commonly used in electroacoustic music. Reduced listening was not identified as an appropriate strategy for inexperienced listeners, as it was argued that it is a strategy commonly 'mastered' only by expert listeners or composers who engage in repetitive listening (see Smalley, 1996 and Barrett, 2007). Additionally, as has been argued by Luke Windsor, as a matter of survival organisms have a natural tendency to search for the source of a sound in their environment, which might be intensified by the 'acousmatic curtain' (Windsor, 2000: 31).

For the HL2 doctoral project the concept of heightened listening has been expanded so that the imaginative aspects of the listening strategy can be explored further. It is proposed that having this flexibility in the listening approach makes it an ideal strategy as a pedagogical tool to help children access sbm through composition. Before explaining this further (see section 2.5) it would be useful to examine listening strategies commonly used in sbm in more detail in order to establish why heightened listening was chosen as the most appropriate strategy to use in the pedagogical context of the HL2 doctoral project. Additionally, the foundation of heightened listening that was established in the HL project will be described more fully, as this forms the basis for the expanded concept of heightened listening that has been developed in the HL2 doctoral project.

### **2.4.1 Approaches to listening in electroacoustic music**

Many approaches to listening in E/A music have been influenced by the work of Pierre Schaeffer. In 1948 he suggested the term 'musique concrète' to describe the experimental pieces he was producing in the radio studios in Paris. This was intended to emphasise a concern with the concrete sound material itself and move away from the abstraction of musical notation and in particular the abstract nature of the contemporary serialist music of the time (Chion, 1983: 37). The act of listening was given precedence over musical notation and composers were encouraged to go back to the ear and their perception of sound (ibid: 189).

Schaeffer identified four listening modes ('Quatre Ecoutes'), which he described in the 'Traité des objets musicaux' (Schaeffer, 1966). These four modes of listening have been explained by Michel Chion (1983) in his 'Guide to Sound Objects, Pierre Schaeffer and Musical Research', which was translated into English in 2009 and published on the EARS site. Chion describes the modes as:

- Mode 1 – Listening (Écouter) – this is listening where one aims to identify the source or cause thereby 'treating the sound as a *sign* of this source' (Chion, 1983: 22, his italics).
- Mode 2 – Perceiving (Oùir) – this is hearing sounds passively while not really listening to them, when, for example, we cannot help but hear sounds but 'there is no intention to listen' (Smalley, 1996: 79). It is perceiving sound at the 'most elementary level of perception' (Chion, 1983: 22).
- Mode 3 – Hearing (Entendre) – Natasha Barrett (2007: 234) describes this as listening in which the cause is ignored so the listener can 'focus on purely spectral phenomena'. This is what Schaeffer calls a subjective mode (along with mode 2) that is concerned with the activity of perception rather than the object of perception (as in the objective modes 1 and 4) (Chion, 1983: 21). It involves stripping the object 'down to qualities which describe perception' (Chion, 1983: 21) and so ignoring any of the signs that would be present in mode 1.
- Mode 4 – Comprehending (Comprendre) – this is a type of 'semantic listening', treating the sound as a sign with some kind of meaning as in a language or a code, for example a musical language (Chion, 1983: 22).

Reduced listening is the strategy that Schaeffer advocated for musique concrète and which has been a very influential approach in electroacoustic music. In part this emerged from the acousmatic nature of radio sound, where sounds removed from their cause were normally manipulated making them seem even more

decontextualized and encouraging 'a new sensitivity to sound' (Dack, 1994: 6). This promoted the first step necessary in the phenomenological reduction (Schaeffer recognised that reduced listening has a philosophical basis in Husserl's theory of phenomenological reduction, see Chion, 1983), which 'is to bracket out the spatio-temporal causes' (Kane, 2007: 3) in order to focus on the substance of the sound. This involves suspending a 'natural' way of perceiving or listening and to consciously put to one side habitual ways of listening in order to experience 'the sound object at its own level' (Chion, 1983: 29), rather than a carrier of meaning or to identify the source. The reduction then aims 'to direct attention back to hearing itself' (Kane, 2007: 3).

### **Difficulties with reduced listening**

Chion (1983) notes that Schaeffer acknowledged that a listener might pass between different listening intentions, for example, from a reduced listening strategy to one that is not (ibid: 27) and it is likely most listeners will move around the four different modes. Smalley discusses this further, saying there could be 'varieties of modal shading and shifts during the listening process even in a work thought to be "abstract"' (Smalley, 1996: 80). It was also noted by Schaeffer that to master reduced listening would take practice and could not be achieved 'at a stroke' (Chion, 1983: 31), something that Smalley (1996: 106) (also see Barrett, 2007: 235) has more recently argued usually occurs when composers repeatedly listen to their own works when refining details.

Additionally, it has been argued (see Wishart, 1996: 129; Windsor's ecological acoustics, 2000: 10; Emmerson, 2007: 6) that humans have evolved a tendency to search for the source which it might be difficult to ignore, a tendency that is recognised in Smalley's theory of 'source bonding' (Smalley, 1997), which he defines as: 'The natural tendency to relate sounds to supposed sources and causes' (ibid: 110).

Therefore, reduced listening does not seem to be an appropriate strategy for inexperienced listeners. Additionally, as Landy (2005) has argued, 'it is hardly

useful in terms of supporting access to or the communication of meaning' (Landy, 2005: 31), making it unsuitable for works where themes or narratives play an integral role. Certainly it would not enable a full appreciation of soundscape compositions where context plays a significant part in what the works are trying to communicate. It was therefore not viewed as a strategy that could be used in the HL2 doctoral project where children were being encouraged to create compositions based on narratives or themes.

### **Referential listening and contextual listening**

As described by Landy (2007: 105), Katharine Norman (1996) has introduced two terms that can be contrasted with reduced listening that it would be useful to introduce at this point as alternative approaches. 'Referential listening' refers to listening that understands 'sounds as referring to objects or events' (ibid: 2) relying on memory to retrieve this information. Norman claims that our immediate response is 'to supplement, or supplant, sound with visual data; we look for the sounding object, either in reality or by using remembered knowledge to envisage a likely source' (ibid). This type of listening then is the opposite of Schaeffer's reduced listening. 'Contextual listening' involves 'placing sounds in a known context' (Landy, 2007: 105). This is listening based on relating 'current experience to our experiential history' (Norman, 1996: 8), and Norman argues we do this prior to gathering referential information:

Inwardly comparing remembered and presently experienced personal contexts for the material, we make a judgement as to its likely referential importance. So contextual listening relates the material to the context of our individual history... (ibid: 8).

As with referential listening this approach can be contrasted with the intention of reduced listening. However, as will now be discussed, a number of composers associated with the European electroacoustic tradition that has its roots in Schaeffer's *musique concrète*, also acknowledge that the referential and contextual qualities of sounds do play a role in some of their works.



### **Shifting between modes – expanding listening in electroacoustic music**

Smalley recognises that a listener will move between Schaeffer's modes and that the contrast between mode 1 and 3 is particularly important (Smalley, 1996: 80). He has synthesised Schaeffer's modes with the theories of Ernest Schachtel in order to represent the relationships between listeners and sounds, preferring the term relationship to mode as it suggests 'shifts in perception' (ibid: 82). Smalley calls mode 1 listening the 'indicative relationship' and noted that this type of listening can be quite snobbishly regarded as trivial in art music circles (ibid). However, Smalley suggests extending mode 1 listening:

...to include a wider frame of references to experience outside and beyond music, we immediately penetrate both more extensively and deeply into the relationship between musical experience and our experiences of living. The sounding materials within a composition cannot be solely or even primarily self-referential. (ibid: 83).

Smalley's expanded idea of mode 1 includes wider referential aspects that can relate to listeners' experience outside of the music. Smalley recognises the value of the extrinsic (relating to non-musical experience) in musical works as opposed to just an appreciation of the intrinsic (music or sound in itself), which is what is advocated in pure reduced listening, suggesting that these themes might exist concurrently (ibid: 105). In Smalley's opinion 'it is impossible for music to be purely intrinsic' (ibid). Smalley (1986: 64) describes sounds as having both abstract (internal qualities) and concrete (outside links or associations) aspects that a listener might choose to move between, which is in effect similar to moving between modes 1 and 3. Similarly, in the HL project (Holland, 2011:19) it was argued that heightened listening might allow for shifting between Schaeffer's mode 1 and mode 3 while listening to a particular work or when listening to environmental sounds.

James O'Callaghan (2011) has argued that referential qualities do not need to be ignored in order to focus on a sounds 'spectromorphological properties' (O'Callaghan, 2011: 55). Similarly, Suk-Jun Kim (2010) distinguishes between two

types of listening that a listener might move between depending on the particular work using what he calls 'acousmatic reasoning'. One of these is 'spectromorphological listening' which is concerned with the way sounds' spectral characteristics change over time while the other, 'semiotic listening', is concerned with what the sounds might signify or refer to (Kim, 2010: 50). He refers to Katharine Norman's (2004: 68) description of listening to Paul Lansky's 'Night Traffic' as an example of a piece where the listener might be drawn to the changing spectral qualities of the sound produced by comb filters and at the same time memories and images associated with traffic (Kim, 2010: 50). This might similarly be described as shifting between Norman's referential listening and an appreciation of the sounds abstract aspects as described by Smalley.

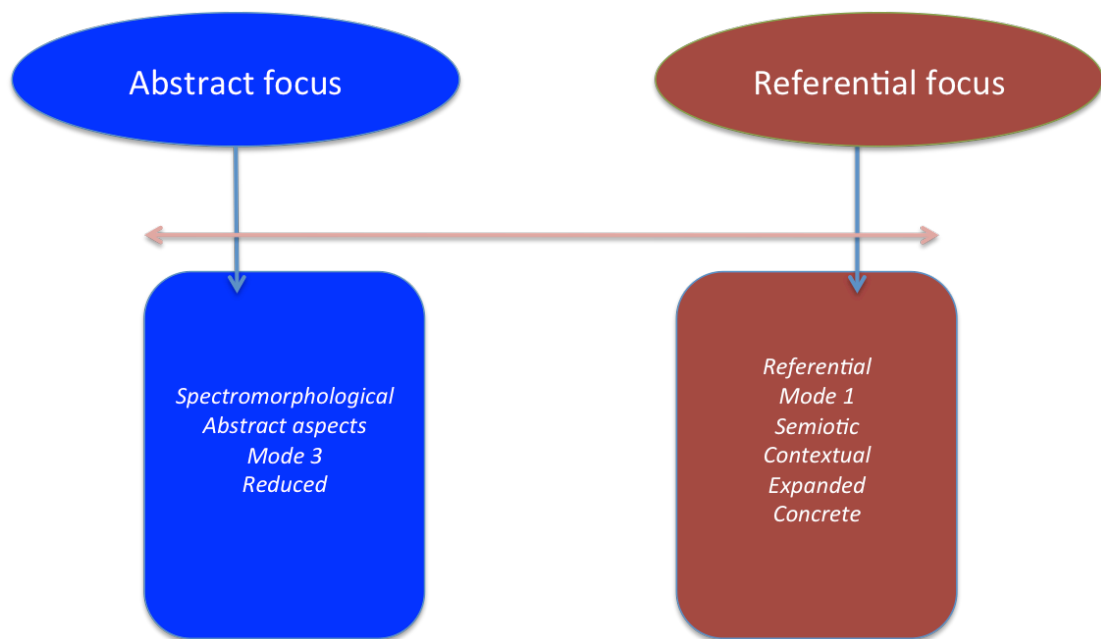
Additionally, the composer Jonty Harrison (1996) has used the term 'expanded listening' to describe listening to pieces that use recognisable sounds so that the "spectromorphological relationships between sounds are complemented by a wider frame of reference: alongside Schaeffer's *écoute réduite* we can perhaps also experience 'expanded listening'" (ibid, his italics). This, too, suggests that shifts from reduced listening to an expanded referential type of listening can be practiced while listening to a piece with sound materials that preserve some reference to the real world.

Another contribution that should be mentioned is that of Francois Delalande's (1998) study investigating listening strategies in electroacoustic music. Three types of 'listening behaviours' became evident in this research, which were: 'taxonomic listening', 'empathic listening' and 'figurativisation' (ibid). As figurativisation is concerned with listening for narrative and empathic listening can often involve metaphor these will be discussed in more detail in section 2.5.1. However, it is important to note the significance of this study, as Delalande's listening behaviours might be closer to the type of listening often encountered in electroacoustic music than reduced listening.

There are clearly parallels between Harrison's complementary expanded listening, Kim's acousmatic reasoning, as well as shifting between Schaeffer's mode 1 and 3

and Smalley's concrete and abstract aspects of sounds. Figure 2.2 illustrates these shifts between listening for abstract features to referential qualities along a parameter. The listening types, discussed above, are placed at the end that they are most closely related to and in between combinations of listening types may be employed. However, within a heightened listening strategy, as defined by this project, these practices are not necessarily separate or unconnected. Indeed, appreciating the more abstract qualities of a sound can lead to a 'creative, enjoyable appraisal of the sound for its acoustic properties' (Norman, 1996: 5) that might support reflective interpretations of the sound that are linked to its referential aspects. Although, it should be noted that this does not apply to reduced listening, which involves a deliberate blocking out of referential characteristics so cannot be said to complement referential listening. It is also proposed that the referential side of the parameter can lead to more imaginative or reflective interpretations and this will be expanded further in section 2.5.

It could be argued that the children who took part in the HL2 doctoral project mirrored this shifting between listening types in the way they worked. Often they listened for what the sound signified sometimes in relation to its source and sometimes through more imaginative associations that became part of themes or narratives. The concept of the heightened listening scale (described in chapter 4), which was developed from observing different emphases in the children's listening and compositional approaches, parallels the shifting between listening types that is being described in this section.



**Figure 2-2 Parameter for abstract and referential listening types**

### **Heightened listening**

Heightened listening was presented in the HL project as a flexible approach allowing the listener to move from practices that include source recognition and imaginative associations to approaches more in common with 'spectromorphological listening' as discussed above and illustrated in Figure 2.2. The type or combinations of listening approach chosen will depend on the material in the particular piece as well as the listener's own personal inclinations. This might depend on where the piece sits on Simon Emmerson's (1986) axis between an 'aural discourse' and a mimetic discourse' or which level of gestural surrogacy the sound inhabits in terms of Smalley's theory (1986). This encompasses different levels of a connection to source up to 'remote surrogacy' where the source is not known, but the listener might still 'be concerned with non-sounding extrinsic links' (Smalley, 1997: 112).

In the HL 2 project this type of shifting between types of listening was encouraged. On the soundwalk (described in chapter 3) the children were asked to listen for the characteristics of sounds, such as their pitch, duration or amplitude, as well as identifying the different sounds that made up their soundscapes. Once this initial

approach to listening was established, the concept of heightened listening outlined in the HL project was expanded to also include a greater exploration of the imaginative associations triggered for listeners by sounds, in order to help the participants develop themes and narratives. Such a creative view of listening was partly inspired by a number of composers associated with the soundscape tradition that emerged from Canada in the late 1960s and 1970s. Before exploring the expanded definition of heightened listening (see section 2.5) in more detail it would be useful to examine the perspective on listening provided by soundscape studies.

#### **2.4.2 Soundscape theory and listening practice**

The soundscape as described by Murray Schafer (1977), who created the term, refers to 'the sonic environment' (Schafer, 1977: 274) and in particular, 'any portion of the sonic environment regarded as a field of study' (ibid). This might be 'actual environments' or could be 'abstract constructions such as musical compositions' (ibid). Bernie Krause (2013: 26) has said the term could refer to 'all of the sound that reaches our ears in a given moment'. Schafer and his colleagues at the World Soundscape Project (WSP) at Simon Fraser University in Canada were concerned with the connection of each unique soundscape to its place and time 'through the combination of its special blend of voices, whether urban, rural or natural' (Krause, 2013: 27). They intended to help develop greater awareness of soundscapes, in particular, sounds that are frequently ignored and they documented 'various sonic environments [...] to promote the importance of the soundscape in the life of the community' (Truax, 2002: 5).

Schafer's theories have been very influential on the HL2 doctoral project and his work in relation to acoustic ecology and education (see section 2.3.3) form the foundation of the exercises included in the HL2 workshops. Additionally, the role of listening in soundscape composition informed the type of creative listening encouraged in the workshops. Therefore, in this section both the role of listening in acoustic ecology and as a creative tool in soundscape composition will be discussed to provide a greater contextual background for the project.

Schafer (1986: 94) acknowledged John Cage's view of music being 'sounds around us whether we're in or out of concert halls' (Cage quoted in Schafer, 1986: 94). Like Cage, Schafer advocated viewing the whole world as a musical composition, where we are all 'simultaneously its audience, its performers and its composers' (Schafer, 1977: 205). In connection with this view, a new field of study called acoustic ecology emerged from the WSP. Acoustic ecology investigates the listener's relationship with their soundscape and 'how the nature of this relationship makes out the character of any given soundscape' (Westerkamp, 2000: 4). The composer Hildegard Westerkamp (who is one of the leading figures in the WSP) has said that 'listening forms the basis for all work in acoustic ecology' (Westerkamp, 2000: 3) and, as Schafer (1977: 206) remarks, is vital 'for improving the orchestration of the soundscape'. Listening represents 'the crucial interface between the individual and an environment' (Truax, 2001: 15) and sound is a carrier of information about the environment through which it travels. Soundscape studies requires a holistic approach to listening that is grounded in the environment and place, as Westerkamp (2000: 3) explains:

Daily *practice* of listening develops in each one of us a conscious physical, emotional, and mental relationship to the environment.

This emphasis on the importance of listening as a practice to develop aural awareness as well as a connection to place were particularly significant for the HL2 doctoral project. The workshops aimed for children to engage and connect with their own environments by developing a greater awareness of the sounds around them and the theoretical basis for this was provided by soundscape studies.

Central to Schafer's argument in his book 'The Soundscape – the Tuning of the World' (1977) (and echoed by others in WSP, such as Truax (2001) in 'Acoustic Communication') is that human beings' listening abilities have deteriorated due to the dominance of the visual in western culture since the Renaissance as well as increased noise pollution (Schafer, 1977). Truax illustrates this view by providing

an account of the incredible listening skills of boat captains who used whistles for echolocation in order to tell their distance from the shore and through which they could deduce whether the shoreline was rocky or sandy or even whether there were logs, a skill that has now been lost due to the modern use of radar (Truax, 2001: 21).

One of the main ways Schafer (1977) proposes to challenge this deterioration is through education (see section 2.3.3 for a discussion on this and how it has been applied in schools). The purpose of Schafer's educational exercises is to increase one's level of attention to the soundscape, in other words to practice listening. Listening can be directed to particular features of a soundscape such as the foreground or background, referring to sounds that appear more prominent (but not necessarily closer) than others (ibid).

### **Characteristics of soundscapes**

The concept of foreground and background sounds was important in Schafer's theory of the soundscape and formed the basis for identifying significant features to enable categorisation of particular types of sounds. 'Keynote' sounds represent the background sounds that give a soundscape its fundamental tone (in reference to the musical term that identifies the key of a composition). These sounds are ubiquitous but not always consciously heard and can have a 'pervasive influence on our behavior and moods' (Schafer, 1977: 9). Whereas keynote sounds occupy the background, 'signals' are sounds that occupy the foreground of a soundscape. These might for example be sounds that represent warnings, such as bells or horns, they are sounds designed to attract attention. The third feature Schafer identified is that of the 'soundmark' derived from landmark. This is a sound that is unique and due to its qualities particularly regarded by the local community. These features emphasise the uniqueness of particular soundscapes, which contribute to the life of communities. However, as Schafer pointed out, the unique character of many soundscapes has been jeopardised by increasing noise pollution since the industrial revolution, resulting in what Schafer describes as 'lo-fi' soundscapes (ibid: 43). Schafer explains further:

The hi-fi soundscape is one in which discrete sounds can be heard clearly because of the low ambient noise level. The country is generally more hi-fi than the city; night more than day; ancient times more than modern (ibid).

Truax (2001: 13) suggests that the lo-fi soundscape is contributing to the deterioration of listening skills, which he describes as:

a set of sophisticated skills which appear to be deteriorating within the technologized urban environment, both because of noise exposure which causes hearing loss and physiological stress, and because of the proliferation of low information, highly redundant, and basically uninteresting sounds which do not encourage sensitive listening.

Indeed this sometimes created a challenge in the HL2 doctoral project as many of the schools were situated in what might be described as lo-fi soundscapes where quieter sounds were masked particularly by traffic noise. The success of the listening exercises was often improved by drawing the children's attention to areas where ambient noise levels were less intrusive. This emphasises a prominent narrative in soundscape theory, which argues that the deterioration of our listening abilities are related to the deterioration of our acoustic environment. From this perspective, sound is always linked to context because it is shaped by the environment through which it travels and also because our sonic memories are strongly connected to context.

The way sound memories are strongly linked to their context is demonstrated by the 'earwitness' accounts collected by the WSP (see for example WSP, 1978), which are the memories of older listeners about sounds from the past (Truax, 2001: 17). Truax provides examples of some of these to show how the detail can remain incredibly vivid over time and that sounds exist in the memory 'in association with their original context' (ibid). One of these examples is the account of boat captains described earlier, another is a recollection of delivery carts in Vancouver in the 1920s that demonstrated how the listener differentiated between the different carts and horses (ibid).



## **Schizophonia**

One term closely associated with Schafer, which refers to technological developments that contribute to lo-fi environments and so make listening in readiness more difficult, is that of 'schizophonia' (Schafer, 1977: 90). This refers to the way a sound, since the technological developments of the twentieth century, can be split from its original source through transmission or electrical reproduction. This is a new development, as Schafer points out, 'Originally all sounds were originals' that uniquely happened in one time and place (ibid). Schizophonia 'creates a synthetic soundscape' (Schafer, 1977: 91) and significantly adds to the lo-fi soundscape. In this situation we can become disconnected from natural sounds and our environment.

From Schafer's perspective, when we lived in a more hi-fi rural environment our ears were more attuned to our surroundings, 'from the nearest details to the most distant horizon, the ears operated with seismographic delicacy' (ibid: 44). It is through ear cleaning, that according to Schafer, we can begin to regain clear hearing. Ear cleaning was the term Schafer (see 1977; 1986) used to describe the process of cleansing the ears necessary before students can listen clearly to their environment. Of course, he did not intend a physical cleaning but a new sensitivity achieved through a series of listening exercises. Schafer shared many such exercises in educational booklets that he first published in the 1960s, which were later all presented in the collection, 'The Thinking Ear' (1986). Schafer's (ibid: 46) principal aim was to try to open the ears of the students to sounds that they had not noticed before. One means of doing this is through soundwalking, which was a tool used in the workshops of the HL 2 doctoral project to help raise the participants awareness of their acoustic environments.

## **Soundwalks**

Hildegard Westerkamp (2001a) describes soundwalks as 'any excursion whose main purpose is listening to the environment. It is exposing our ears to every sound around us no matter where we are'. Westerkamp uses soundwalks as part of soundscape workshops where participants are asked to focus on particular aspects

such as the sounds of the body, nearby sounds, the quietest sounds or something specific, such as the wind and how many different sounds it creates (Westerkamp, 2001a). Drever (2009: 165) remarks that in contrast to concert hall listening the soundwalk is concerned with everyday life and sounds, it is unprejudiced. For Westerkamp (2006) it is an inspirational tool that allows the listener to deepen their relationship, knowledge and perception of a particular environment. This makes it an appropriate educational tool as well as a compositional one, which is why it became such a valuable exercise in the workshops for the HL2 doctoral project. Westerkamp views each soundwalk as a unique 'piece' created by the listeners and the environment together (ibid).

Schafer differentiated between two types of soundwalk; one of these is a listening walk, which is simply a walk where the participants focus on listening in silence. However, a soundwalk explores the soundscape of a particular area but might also include ear cleaning exercises as well as sound making by the participants. For example, this could involve a score, which might include a map and also draw the listener's attention to qualities such as pitch. In some soundwalks the participant might be asked to produce sound, thereby becoming a 'composer-performer' (Schafer, 1977: 213). The soundwalks in the HL2 doctoral project provided instruction sheets (see Appendix A) for the participants in order to guide them and draw their attention to the different types of sounds around them.

Westerkamp's (2001a) definition of soundwalking calls for close attention to the sounds around us in order that quieter sounds may not be missed. However, she also encourages participants to listen to their own responses to the sounds, in other words:

their own inner sounds, thoughts and voices—i.e. the running inner commentaries, reactions, the inner processing of perceived sounds, or thoughts wandering off into seemingly unrelated areas, and so on (Westerkamp, 2006).

For the HL2 doctoral project this was potentially viewed as a rich resource for inspiring the children to think creatively about sound and listen to the world as

composers. Drever also views the soundwalk as inspirational, saying that it is an opportunity for 're-sensitization' in order to glimpse the 'unspoken' or often 'invisible' aspects 'of the everyday' (Drever, 2009: 166). He also discusses how composers, artists and poets have often been known to walk for inspiration, or 'to help promote a creative frame of mind' (ibid: 171).

It was through the WSP that soundwalking became fully established not only as a compositional tool but also a pedagogical one (Drever, 2009: 188). Soundwalking is by nature accessible and open to everyone one. Andra McCartney (2010) has noted that people who normally might feel uncomfortable talking about contemporary music as they lack knowledge are more likely to contribute to discussions about the musical aspects of soundwalks they have participated in. Soundwalks provide people with an opportunity to unplug from the schizophrenic soundscape, which has developed in new ways since Schafer invented the term through the ubiquity of headphones plugged into devices such as ipods. As Westerkamp (2011: 13) observes, participating in a soundwalk without talking is a rare opportunity in today's world and children often find the experience inspirational. This is why it became such a vital tool in the HL2 doctoral project to help connect the children with the sounds around them.

### **The role of listening in soundscape composition**

Listening plays an important role in the creative practice of soundscape composers and this creative interpretation of listening was influential in the listening practice taught in the HL2 doctoral project. Westerkamp (2002: 56) argues that listening plays an integral role throughout all stages of composition going beyond studio work, meaning that daily listening practice needs to be part of the soundscape composer's life. Westerkamp explains the role of listening in the success of soundscape pieces:

One can assume for audiences listening to such compositions that the experience of conscious soundscape listening in daily life would add significantly to the understanding of and involvement with a soundscape composition (Westerkamp 2002: 56).

McCartney (2002: 45) argues that Westerkamp 'aims to sensitise listeners to the sounds of the environment around them, and to bring attention to small sounds that are often unnoticed' often by amplifying them or juxtaposing them with processed versions. Truax (2002: 6) describes how a number of soundscape compositions 'can be placed on a continuum between what might be called "found sound" and "abstracted" approaches'. This ranges from works that use environmental recordings that have only been edited and mixed but without transformations, to works where transformed sounds are abstracted from the originals through processing. Truax gives an example of using time stretching to do this, where the resultant transformation might contain a degree of recognisability with the source (ibid: 7). (Interestingly, the children in the HL2 doctoral project frequently used time stretching in this way particularly with voice sounds. For examples, see Chapter 4 section 4.2.3). Truax believes that these different degrees of abstraction have resulted in a wide range of works across this continuum but he argues that soundscape compositions 'always keep a degree of recognisability' in the sounds used (ibid). Soundscape compositions, as defined by the founders of the WSP (see Schafer, 1977; Westerkamp, 1999), will therefore usually have some connection to place or context.

However, Truax (2012) has more recently placed a particular emphasis on works made in locations that are known to the audience. This requires composers to engage in deeper 'involvement with particular social, cultural and environmental contexts, and careful thought about what needs to be said about them' (ibid: 200), therefore giving the works particular meaning and relevance to that audience. This can be an engaging aspect of educational initiatives, such as the HL2 doctoral project, where the students use recordings of their own acoustic environments to make soundscape compositions or sound installations relating to place.

Some soundscape composers try to guide the listener from referential aspects of sounds that point to the source and context to an inner world of the sounds, which is rich in imaginative associations, as in Westerkamp's '*Kits Beach Soundwalk*'. Through studio processing Westerkamp shifts the listener's perspective from the

wider soundscape that includes the hum of the city to ‘the inner world of the barnacles... to stimulate the imagination’ (Kolber, 2002: 42). The listening exercises used in the HL2 doctoral project mirrored this type of shift. The exercises first focused on referential aspects, followed by a change of focus onto the sounds’ characteristics in the soundwalk and then exercises that aimed to encourage imaginative listening. The soundwalk exercise in particular was influenced by Westerkamp’s approach (for a more detailed description of this see chapter 3). Westerkamp (1999) regards soundscape composition as ‘a new place of listening’ that creates a balance between ‘reality and imagination’. She explains further:

Soundscape listening and composing then are located in the same place as creativity itself: where reality and imagination are in continuous conversation with each other in order to reach beneath the surface of life experience (ibid).

This playful balance can be present in listening for other types of sound-based music, as Suk-Jun Kim (2010: 47) describes, ‘As such, for listeners and composers, the interplay between what is given (perceived) and what is not (and must therefore be imagined) is the very playground of electroacoustic music.’ For some forms of what Katharine Norman (1994) calls ‘real-world music’ (music that uses ‘real world’ recordings), this can require an approach to listening that is open to imaginative associations, symbolism and metaphor. This can then allow the composer to introduce aspects of narrative into a composition. For the HL2 doctoral project this aspect of heightened listening was explored more deeply to provide an opportunity for children to explore their inner worlds and imaginations in their compositional work. The basis for this quality of heightened listening will be outlined further in the next section.

## **2.5 The Inner Soundscape: Internalising Heightened Listening**

Building on the concept of heightened listening outlined in section 2.4.1, the HL2 doctoral project aimed to expand the imaginative aspects of heightened listening as a pedagogical means for helping develop themes or narratives to support compositional work. Creative writing is encouraged for children at Key Stage 2 (see Ofsted, 2011), so by linking this practice with sound-based composition it was proposed that this would offer a familiar ‘way in’ to making music in an unfamiliar form (sbm). Such imaginative listening that helps develop aspects of metaphor and narrative is advocated by a range of sound-based composers (for example, see Darren Copeland, 2000; Robert Normandeau, 1992; Hildegard Westerkamp, 1999; Katharine Norman, 1996; James Andean, 2014). Similarly, there are significant electroacoustic works that exploit this potential of sound, notably Luc Ferrari *‘Presque Rien No. 1’* and *‘Red Bird’* by Trevor Wishart. Working in this way might involve listening that explores the particular meaning a sound might have for a listener, which could involve exploring shared cultural references or universal aspects of human experience. This section will explore in more detail these approaches and how they relate to the listening exercises and compositional tools used in the HL2 doctoral project.

### **2.5.1 Reflective Listening and Association: learning to listen as a composer**

A type of reflective listening (Norman, 1996) that explores sound through its resonance with one’s own experience was incorporated by the HL2 doctoral project into exercises that were used in the workshops. Section 2.5.1 will examine this type of approach before discussing how it can support the use of themes and narratives in compositional practice in a pedagogical context in section 2.5.2.

## **Reflective listening and the inner soundscape**

Norman (1996) argues that while 'real -world sounds are loaded towards referential listening' this does not mean 'that real-world listening is devoid of imaginative activity' (ibid: 5). By using a more 'reflective listening,' such as when hearing 'the song of the sea' (ibid), 'we use our ears and minds to create, or reinterpret, imagined meanings for the sound' (ibid: 6). This type of listening is a 'creative, enjoyable appraisal of the sound for its acoustic properties' (ibid: 5). It is listening that can consider both the context but also our relationship with the sounds in terms of our memories and past experience, in other words what a sound might mean to us as a listener. Such imaginative reflection could involve accessing what Katerina Tzedaki (2011) refers to as the 'inner soundscape':

Our inner soundscape is a personal sound scene, consisting of our thoughts, music remembered or improvised, fragments of filtered memories, imagined sounds and scenarios, voices of people we know, dreams we remember (ibid: 54).

Similarly, Isobel Anderson (2012), argues that 'sound is heard in the mind' and that 'it is the mind that interprets it'. This perspective has parallels with Hildegard Westerkamp's remarks about encouraging participants on soundwalks to pay attention to their own 'inner' responses to the sounds around them, as discussed in section 2.4.2. Similarly, it was during the soundwalk that participants in the HL2 doctoral project were first encouraged to reflect on how the sounds made them feel. Listening in this way relates to soundscape compositional practice and Westerkamp (1999) has elsewhere argued that soundscape composition 'creates a place of balance between inner and outer worlds, reality and imagination'. Also, there are parallels with Pauline Oliveros's (2005) concept of 'Deep Listening'. Oliveros says that: 'Deep Listening comes from noticing my listening or listening to my listening and discerning the effects on my mind/body continuum, from listening to others, to art and to life.' (ibid: xxiv). This is listening as a form of meditation and is a practice 'intended to facilitate creativity in art and life' (ibid). This has similarities to Westerkamp's description of soundwalks and her listening practice (see Westerkamp, 1999, 2002, 2006).

The type of listening that Westerkamp and Norman advocate invites creative participation enabling listeners to subjectively interpret sounds in relation to their own experiences. Therefore, as Westerkamp (2002: 56) remarks, creating resonance between an audience and a work is a responsibility shared by the composer and audience. Listening becomes a creative act which, through internalising an original listening experience, can offer a 'doorway' into creating a composition, 'suggesting both the real-world place from which it arises and the imagined realms to which it leads' (Nagai, 2011: 218). Similarly, while referential listening and reflective listening could seem like independent activities, Norman (1996: 5) sees a relationship between them 'working together as a means of synthesizing our knowledge and our enjoyment of real-world sounds'. We can therefore shift between creating 'imagined meanings' (ibid: 6) for sounds and 'referential remembering' (ibid: 7) depending on how we focus our attention. As Norman explains: 'after we see the log-fire, we sit down to watch it for demons' (Norman, 1996: 7).

It might be suggested that this adds another listening type to the parameter shown in section 2.4.1, meaning that heightened listening allows not only shifts between listening with a referential focus and an abstract focus but also into the imaginative, creative modes of reflective listening. This shift in modes was often evident in pupil's interpretation of sounds in the HL2 workshops, but the shift from referential listening to reflective listening often happened due to a transformation of the sound that moved it further from its original context but usually retained vestiges of the source (for example, see section 4.2.2 for how time stretching voices in case study 2 influenced narratives). In other words, seeing the demons in the flames, to borrow Norman's analogy, usually happened once the sound had been manipulated in some way. Indeed, this often happened quite literally in that the imaginative interpretations of the transformed sounds frequently involved references to horror stories or films, as in the examples cited above from section 4.2.2. An imaginative reappraisal of sounds was encouraged in listening exercises (described in chapter 3) but transforming the sounds through



effects aided this process when devising themes or narratives for the compositions.

### **Internalised listening**

Such reflective listening involves internalising the original listening experience in order to see how sounds resonate with past experience (see Nagai, 2011) and this can be used by composers to develop themes or narratives. Writing and drawing exercises in the HL2 doctoral project were designed to do this by encouraging reflective listening in order to help develop ideas for narratives or themes that could aid the development of compositions. This inner listening can contribute to the process of trying to make sense of the sounds we hear, and our inner perception of a sound might be different from the original through an imaginative development that relates to our previous experiences. Norman (1996: 9) calls this drive to align our auditory experience with previous experience a ‘compulsion’:

The more mysterious the material, the more ambitious our perceptual reconstruction and the more varied the relationships we are willing to entertain. We want to make these confusing sounds relevant to the fabric of our lives, to contextualise them.

It was often observed in the HL2 doctoral project that children seemed to be predisposed to making imaginative interpretations of unfamiliar processed sound that related back to their previous experiential models of such sounds. As might be expected, these often referenced cinema or computer games and related to narratives common to these types of media. For example, in Phase 2 of the project, a piece was created entitled ‘The Lonely Ship’ that was accompanied by a narrative about a ship attacked by pirates, a story that echoed a number Hollywood films (see school G in section 4.3). This might be a naïve and less sophisticated ‘perceptual reconstruction’ than what Norman is referring to, but imaginative connections were still made with sounds that were removed from the source but grew from the children’s memories and experience. It can be argued that this process was the beginning of learning to listen as a composer and develop their reflective listening ability.

One of the central aims of the HL2 doctoral project was to provide as much opportunity for participation as possible. This expanded vision of heightened listening enabled creative participation not only in the compositional process but also when listening to others work. For example, when providing feedback on peer's work children were asked, where appropriate, whether their interpretation of the work matched the narrative or theme described by the child who composed the piece. This encouraged listening out for the narrative, a 'listening behaviour' identified by Francois Delalande (1998) in his research as 'figurativisation', which will be discussed in the following section.

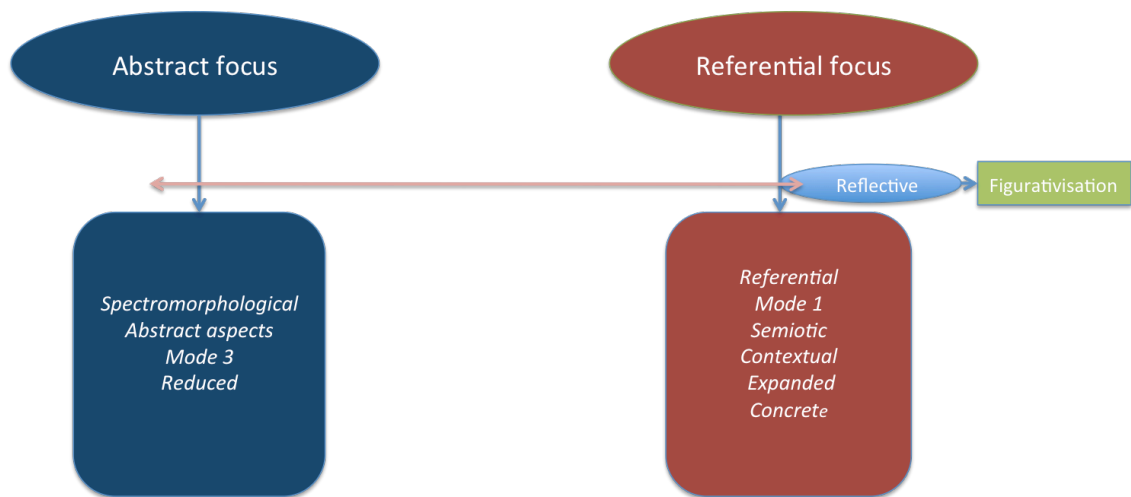
### **Listening behaviours**

Delalande conducted a study at the GRM in Paris in which he used 'Sommeil' by Pierre Henry as a basis for investigating listening strategies in electroacoustic music. Although this was a small study involving eight subjects, three types of 'listening behaviours' became evident that are useful for this discussion, which were: 'taxonomic listening', 'empathic listening' and 'figurativisation' (Delalande, 1998).

Taxonomic listening is focused on a 'global' perspective of a given piece where the listener distinguishes between 'large morphological units such as sections or chains' (ibid: 26) and is able to understand how they relate to each other within the arrangement of the piece. Empathic listening (ibid: 37) focuses on feeling, where listeners might describe sounds as, for example, blows or impacts almost as if they were experiencing these sensations physiologically. Figurativisation (ibid: 47) is where the listener interprets form as narrative. Sounds might 'evoke something that moves, ultimately living' (ibid) and can be contrasted with 'other configurations which have a contextual function (decor, signal, scene)' (ibid). It might be suggested that this represents a more 'naïve' or childlike attitude to listening, but Delalande points out that, in terms of analysing Pierre Henry's 'Sommeil', such a narrative view of the work is similar to the one held by the composer (ibid: 51).

It could be argued that Delalande's research provides a view of listening that relates more closely to listening strategies commonly used for contemporary electroacoustic music than perhaps is provided by Schaeffer's reduced listening. It has since been highlighted as a very significant piece of research that should be tested further (see Landy, 2007: 95). It is interesting that these listening behaviours were revealed by investigating the listening of subjects who are 'close to electroacoustic music' (Delalande, 1998: 64). Behaviours similar to empathic listening and figurativisation were observed in the children who participated in the HL2 doctoral project. Simple taxonomic listening was also observed (and encouraged) especially in phase 3 of the research (see section 4.4). Additionally, inchoate forms of this were evident particularly when children focused more on the abstract qualities of the sounds (see section 4.4 for examples of this in phase 3 of the research). Also, as illustrated by the examples referenced earlier, it was common for children to interpret pieces based on feelings evoked by the sounds and by searching for narrative meaning, which often built on listening that was reflective in nature. However, listening was also used creatively to develop narratives making the listener's search for narrative into part of the compositional process, rather than just being an observed reception behaviour as described in Delalande's figurativisation.

As there appears to be a relationship between figurativisation and referential types of listening (referential qualities might play a role in forming a narrative) as well as with reflective listening, figurativisation could also be added to the end of the parameter (Figure 2.2) used to illustrate shifts between listening types shown in section 2.4.1. As Norman acknowledges, reflective listening and referential listening complement each other rather than being separate activities. Therefore, as illustrated in Figure 2.3 below, reflective listening is something that can emerge from referential listening and lead to the search for narrative represented by figurativisation.



**Figure 2-3 Expanded parameter of abstract and referential listening types**

The next section will explore models for the use of narrative within sbm and how this could then be usefully applied in a pedagogical context and might develop from this reflective listening practice.

### **2.5.2 Narrative and metaphor in sbm and its pedagogical potential**

As explained in the introduction to 2.5, developing narratives through creative writing is encouraged by Ofsted (2011) and is used in primary schools, so adapting this familiar model of creativity to sbm composition for the HL2 doctoral project was a useful means for introducing the children to working with sbm. While the intention of many sbm composers might be to make their music abstract with little referential content, the use of metaphor and narrative is something that a number of significant sbm composers (for example, Robert Normandeau, Luc Ferrari, Trevor Wishart) have included as a part of their work. It has been recognised for some time that electroacoustic music can use sound for its imagery and metaphor (for example, see Wishart, 1986). Therefore, as this type of compositional approach does exist within sbm, it seemed that incorporating narrative into the workshops would be an appropriate way to help facilitate the children's engagement.

Some composers argue (Copeland, 2000; Norman, 1996; 2004; Normandeau, 2008; Andean, 2013) that sbm has the potential to be rich in metaphors that can relate to the real world and our experiences of it in ways that instrumental music cannot. Robert Normandeau, in an interview with David Ogborn, has commented:

It is fascinating that, in electroacoustic music, the meaning of the sounds can be kept. Composers are able to play with these meanings, which is something very difficult to achieve with instrumental music (Ogborn, 2008).

However, the use of narrative within sbm can be quite sophisticated and difficult to define for a pedagogical project for Key Stage 2 children. Therefore, for the purposes of this project, where narrative was being used to help facilitate the children's access to sbm, it was explained that this did not necessarily mean a conventional story but could be something more like a dream or just closer to a theme.

Additionally, James Andean (2013) has highlighted the pedagogical potential of narrative in acousmatic music, arguing it can offer a 'way in' for those with little previous musical experience:

...narrative is a daily aspect of our cultural lives, and while sonic story-telling may not be the most common form of everyday narrative, it is nevertheless easily recognisable and approachable, and thus potentially offers a nice 'way in' to the acousmatic world (ibid).

Similarly, Meelburg (2006) argues that human beings have an inclination to interpret the world through narrative. Meelburg suggests that in contemporary atonal music, listening for a narrative could lead to a greater degree of comprehension for music, 'which is often regarded as ungraspable. It might enable the listener to follow the music, to make sense of it' (ibid: 3). The HL2 doctoral project encouraged participants to develop themes or narratives that could help them to arrange and sequence their sounds but also offer them something 'recognisable' when composing music in an unfamiliar form. It was also observed that children made connections with cinema when interpreting others work or

creating their own pieces, for example one piece in phase 1 of the research referenced the Addams family (see school B in section 4.2). However, connections between cinema and sbm have been previously recognised and exploited by a number of composers.

### **Cinematic connections**

In the same article that Norman (1996) introduced the reflective and referential listening terms, she discussed parallels between real-world music (sbm that uses recognisable real-world sounds rather than abstract sounds) and cinematic montage. The types of listening described by Norman can form the basis for developing real world pieces that can help the listener reinterpret reality and lead them on an ‘imaginative journey’ (Norman, 1996: 19), in some respects similar to that experienced in cinema. Andean (2014) claims that real-world acousmatic music is closer to other art forms, such as cinema, than most music in its use of narrative. Additionally, Michel Chion (1991) who, as well as being a composer, is an acknowledged expert in sound in cinema, created the term ‘cinema for the ear’ in relation to *musique concrète* and as noted by Landy (2007: 89), ‘In both audio-only and audiovisual contexts he celebrates the art of montage...’. Similarly, the composer Robert Normandeau (1992) has used the phrase ‘cinema for the ear’ to refer to some of his works that include a narrative. The way narrative was introduced into the HL2 workshops (the compositions were referred to as ‘sound stories’) has similarities with Normandeau’s explanation of the term as discussed in an interview from 2008:

I can transform these sounds in such a way that they become unrecognizable. But I can also use them because they mean something. And I can tell a story with my sounds. Of course, music is not literature, and sounds are not words, so it would be difficult to tell a precise story, but it is possible to generate meaning in the listeners’ imagination (Ogborn, 2008).

Normandeau also comments in the same interview, referring to his work *Rumeurs (Place de Ransbeck)*, that when hearing real-world sounds in acousmatic music ‘you imagine it according to your own experience’ (Ogborn, 2008). As with *Rumeurs*, some of the pieces (see SBcomp2 on the DVD in the school B folder)

composed in the HL2 doctoral project also made use of recordings of doors closing around the schools, which, although the doors were recorded in environments the pupils knew well, they also represent sounds that anyone can relate to their own experience.

As noted by Andra McCartney (2002) in relation to Westerkamp's *Cricket Voice*, cinematic references are common for inexperienced listeners, which can result in multiple interpretations some of which can be threatening and relate to associations with horror films while some can be calm and meditative. These complex responses also occurred in the HL2 doctoral project sometimes within the same participants (see section 4.4 for responses to the listening exercise in phase 3). McCartney argues differences in response can be due to listeners' different backgrounds and experiences (McCartney, 2002: 45). It was intended that writing or drawing could aid others appreciation of the works when they listened to them in the concert held in the final workshop of each case study, as this helped them to describe the theme or narrative of their pieces in order to aid their peer's appreciation. Additionally, the rest of the class were given the opportunity to feedback and describe their personal interpretations of the works.

As Andean (2014) notes, the construction of narrative in acousmatic music is something that is shared by the composer and listeners and a 'dialogue' between the two therefore becomes essential. Andean suggests that it is only upon reception of a piece that the full 'narrative identity' is revealed (ibid), so it was important in this project to include a concert with the opportunity for feedback within the workshop structure. This also relates to the importance of dramaturgy in the reception of sound-based works highlighted by Landy (1994) and supported by the findings of the Intention/Reception project (Weale, 2005), which was also demonstrated in the HL project (Holland, 2011).

## 2.6 Summary

This section has looked at the contextual basis for the development of heightened listening from how it was envisaged in the HL project, as explained in section 2.6, into a reflective internalised listening (advocated by composers such as, Westerkamp, 1999 and Norman, 1996; 2010) that could be used as a pedagogical tool to support the compositional practice of KS2 pupils. The HL2 doctoral project used such approaches as a basis for developing exercises that aimed to foster creative listening. Heightened listening has therefore been expanded in the HL2 doctoral project to allow not only shifts between referential and spectromorphological listening (as described in section 2.4) but also into a more imaginative reflective listening from which themes or narratives for compositions can develop. Such an approach allows the use of a model (for creating narratives) that the children would be familiar with to offer a doorway into an unfamiliar form of music. This approach therefore combined the known with the unknown in order to help scaffold learning about sbm composition in an engaging way, which is consistent with the social constructivist theories of Vygotsky and Bruner described in section 2.2.2. Listening and written exercises were devised to help the children develop ideas once they began experimenting with sound processing and editing. The development of such exercises will be described in the next chapter, which will outline the methodology for the project.



## **3 Methodology**

### **3.1 Introduction**

The principal purpose of the HL2 doctoral project was to investigate whether the expanded vision of heightened listening discussed in chapter 2 can be used as a compositional tool for facilitating primary school children's engagement with sbm. The research involved case studies (including a series of workshops) in eight separate primary schools across three phases of the project. Chapter 3 will first examine the philosophies that form the foundation of the methodology and then describe and explain the overall research design in reference to the former. These underpinning philosophies, which will be described in section 3.2, reflect current practices common in contemporary educational research and were influential in the evolution of the research design through its different iterations. Once criteria for sample size and type were established (in line with the underlying grounded theory model), ethical issues arising from the research were considered. Additionally, alongside the design of workshop structures, which were developed throughout each phase, methods for the collection, analysis and evaluation of the data were decided. An explanation of these research design issues will be provided in section 3.3, but first there will be a discussion of the two main research theories that underpin the project as well as an examination of the case study approach to research design.

### **3.2 Research Paradigm: Underlying Methodological Philosophies**

This section will situate the project in the wider context of educational research. Social research is often divided into two contrasting paradigms that represent different perspectives or worldviews. These are represented by the terms 'normative' and 'interpretive' and reflect positivist and anti-positivist viewpoints (Cohen, Manion and Morrison, 2011: 17). The methodology for this research is

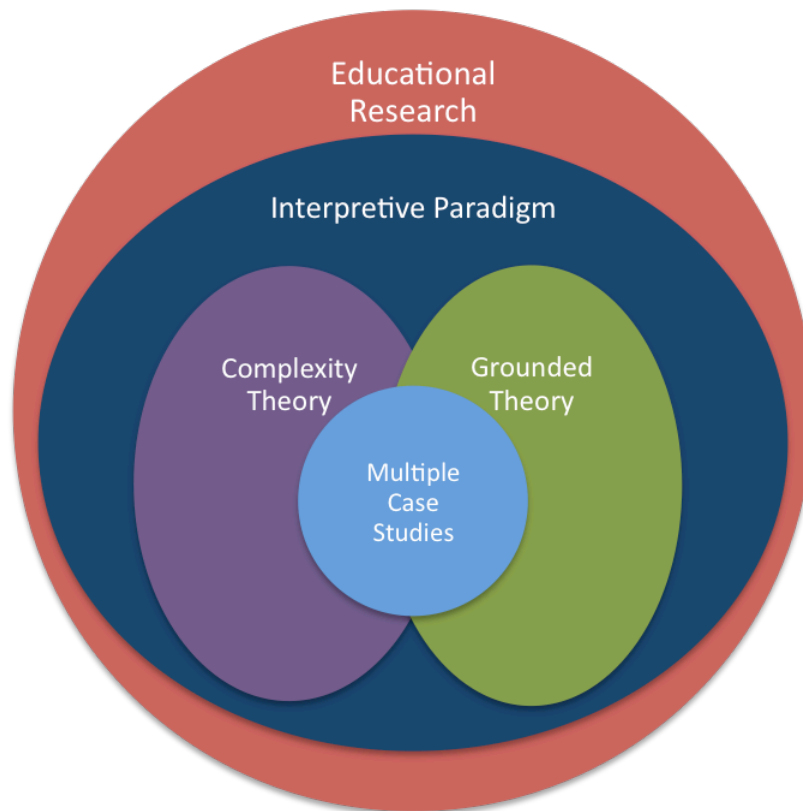
based on approaches used in qualitative research that reflect an interpretive perspective. As Cohen et al state (ibid: 6) such approaches are based on a view of social reality that has significant implications for the development of a research methodology in schools. This perspective stresses the subjective in the creation of social reality. From this perspective, a researcher can never be completely objective as their interpretation of social reality will be shaped to some degree by their own experiences and identity (Denscombe, 2014: 2). Similarly, emphasis is placed on a participant's unique understanding and interpretation of a particular situation, and such a methodology would be called 'idiographic' (Cohen et al, 2011: 6). The interpretive model seeks to 'understand the subjective world of human experience' (ibid: 17).

This is in contrast to a positivist view, which takes a deterministic view of human behaviour (ibid: 15) and would use a 'nomothetic' approach to research (Cohen et al, 2011: 6). Such an approach would be concerned with trying to discover general laws that explain and determine the object of investigation, applying a natural science model of research (Denscombe, 2014: 2). This would be concerned with revealing objective laws such as those found in the natural world, using mainly quantitative methods (Cohen et al, 2011: 6).

However, Pring (2009: 44) has argued that the distinction between the interpretive and positivist schools is a 'false dualism' and that views of social reality should avoid such polarisation as the way educational practice is understood and explained is far more complex than that (ibid: 88). Pring argues that both approaches can be combined and to present these views as opposites is a mistake (Pring, 2009: 56).

In summary, despite the divisions often presented between the normative and interpretive paradigms, it can be argued that this is an over-simplification (Denscombe, 2014: 2) and that in educational contexts the methods associated with each can actually be combined where it is useful to do so. As Denscombe (2014: 158) argues, it is better to be pragmatic and make decisions based on how useful methods are for addressing a particular question rather than whether they

fit with a particular research paradigm. Therefore, the HL2 doctoral project, although working within the interpretive paradigm, has adopted a mixed methods approach where appropriate (for example in the questionnaires, see section 3.3.3).



**Figure 3-1 Supporting framework of the project's methodology (diagram structure informed by Therapontos, 2013:105)**

This section will examine two theories used within the interpretive paradigm that have influenced the methodology for this project. Figure 3.1 above illustrates how the supporting framework of the methodology sits within the broad field of educational research. The project is primarily situated within the interpretive paradigm using complexity theory and grounded theory as complementary approaches that have guided multiple case studies. The case study approach will be discussed in section 3.2.3, while in section 3.2.2 grounded theory, which could be viewed as an attempt to bring a more verifiable method into qualitative research, will be discussed (a criticism sometimes aimed at interpretative methods

is that they lack rigor). Firstly, complexity theory will be introduced. This is a relatively new paradigm for educational research, which allows for qualitative and mixed methods approaches and has played a significant role in the development of the HL2 methodology.

### **3.2.1 Complexity Theory and Educational Research**

Complexity theory has emerged recently within the field of educational research. It does not view the world as either fixed and quantifiable or so dynamic that attempts to explain it are futile. It could therefore be positioned somewhere in between these two extremes (Davis and Sumara, 2008: 35). Therefore, although it is usually associated with interpretive approaches it is also appropriate for a mixed methods approach. Emerging from science in the mid 1980s (see Waldrop, 1992; Urry, 2005) its influence has been wide ranging and it has been applied to a number of disciplines within the social sciences. It began to influence social science research in the 1990s (see Byrne, 1998) following which its affect on educational research developed (for example, see Morrison, 2002) although its emergence is still at an early stage (Morrison, 2006: 1; Cohen et al, 2011: 28). It is a theory that can be difficult to define due to the different interpretations of complexity that exist (Ricca, 2012: 32) However, there are key characteristics that are common to complexity thinking (see Cohen et al, 2011: 28; Morrison, 2008; Mason, 2008) that make it useful for applying to educational research and in particular the HL2 doctoral project. The following section will outline these characteristics and how they apply to the HL2 doctoral project.

Complexity theory is not defined by particular methods of investigation (Davis and Sumara, 2008: 36) as it recognises that with a diversity of different contexts different modes of inquiry will be necessary specific to those situations (ibid: 36). It is therefore not rigid in its methodological approach. It views the world in a way that rejects a linear and deterministic understanding of events and systems. Complexity theory proposes that the world is not easily predictable and cannot be broken down into parts that can be analysed separately to provide clear

explanations. Rather it views phenomena in non-linear and holistic terms and sees different elements and participants as interconnected, variable and self organised (Cohen et al, 2011: 28). This contrasts with approaches to research that focus on individual parts or agents. While these might be appropriate in certain contexts, it is argued that they are inadequate for researching the multi-layered, intertwined world of the classroom (Davis and Sumara, 2008: 35). Complexity theory is usually concerned with anything that might constitute a living system (ibid: 36). Such systems are usually part of, arise from or give rise to, other systems (ibid).

For the HL2 doctoral project, the groups that the participants sometimes worked in could be viewed as systems (that are part of a larger system of the whole class and then the whole school). Complexity theory views groups, classes and schools as being part of ever wider ecosystems or webs that form part of the larger ecosystem of society. These constituents 'exist in symbiosis' and complexity theory 'provides the nexus between macro- and micro-research' (Morrison, 2008: 28) with an openness to this wider web of relationships.

One aspect of complex activity focused on by Davis and Sumara (2008: 38) is the transformation of the group into more than its individual parts and the opening up of new possibilities this enables, which has parallels to the important role that peers can play in the development of the Zone of Proximal Development discussed in section 2.2.2. This type of complex enquiry informed the study of participants' interaction and the creative work that resulted. For example, the observation templates that were completed after each workshop directed reflections that considered the perspectives of complexity theory, such as how the groups interacted and influenced each other. Such groups could also be likened to what Wenger (2006) calls 'communities of practice', a term used to describe groups of people with a shared interest who want to learn to do it better (ibid: 1). For this research the participants learnt to be composers together, often helping and supporting each other. The creation of such a community of practice 'allows for the mutual influence and patterns of connection that are required by complex systems' (Ricca, 2012: 44).

Cohen et al (2011) identify some common features of complexity theory. What follows is an outline of those that have particular relevance for this project:

**Feedback** – this will occur between the interacting parts of a system. This can be negative feedback, which helps to keep systems in check and from spiralling out of control (Davis and Sumara, 2008: 42). In an educational context such feedback could be ‘for example learning that one has failed in a test’ (Cohen et al, 2011: 29). However, positive feedback gives increasing returns, ‘it amplifies small changes’ (Morrison, 2008: 21)). For example, ‘once a child has begun to read she is gripped by reading; she reads more and learns at an exponential rate’ (ibid). According to complexity theory the methodology should then aim to encourage this type of positive feedback. In the HL2 doctoral project the compositions were not graded, rather the sharing of ideas, openness and experimentation were encouraged with the aim of giving the children a positive experience of sbm composition that was not focused on success or failure according to a fixed set of criteria.

**Connectedness** – this is central to complexity theory and emphasises the links and connections that exist within systems. Applied to education, children are connected to families, teachers, peers and groups. A child cannot be completely separate and isolated, but will have various external and internal links, which will all influence the system and their participation in it. These types of links, which were not always clear or verifiable, affected the way children worked and influenced each other within the HL2 workshops. For example, some of the children with formal musical training approached the development of their compositions differently (for example they seemed more likely to focus on the abstract aspects of sounds than the referential) than many children without much prior musical knowledge.

**Emergence** – A system is complex and more than the sum of its individual parts (Goodwin, 2000: 42). They are self-organised. Order does not get imposed from the outside but emerges internally through self-organisation and not through a prior grand design (Cohen et al, 2011: 29). It evolves and can only do so where

there is 'diversity and deviance' (Stacey, 2000: 399), suggesting that such evolution cannot be controlled from the outside (i.e. by a teacher) (Cohen et al, 2011: 29). Emergence represents a process of continuous creativity (Morrison, 2006: 3), results that might not have been imagined, can arise from interactions between different elements that can be seen as 'creative surprises' (Goodwin, 2000: 42). This has parallels to the 'bottom up' (Landy, 2012) approach to composition as discussed in section 2.3.2 that often guided the development of compositions in the project.

As complexity thinking does not view systems as linear or mechanical, there has been a particular move away from viewing education as orientated towards a set goal. Rather with its emphasis on emergence, complexity theory, when applied to education, is concerned with 'expanding the space of the possible' or for providing 'the conditions for the emergence of the as-yet unimagined' (Davis and Sumara, 2008: 38). This is commensurate with the objectives of this research, which sought to allow participants creative freedom within certain boundaries, allowing a space for 'the as-yet imagined' to evolve. Similarly, as the project was influenced by a grounded theory approach, conclusions and theories have emerged from the data as well as developments in the methodology in each phase. Also, in a project guided by complexity theory and constructivism, pupils' interest cannot be controlled from the outside but fostered and allowed to form from the inside allowing the participants to construct their own understanding through practical engagement. The HL2 doctoral project aimed to encourage participants to consider listening and sound-based composition not as part of a single project to complete, but as opening the door to a new world of creative and musical possibilities.

Methodologies based on complexity theory often use participatory research and case study approaches that use qualitative techniques, which are capable of taking in different perspectives from as many participants as possible. It argues against linear views of causality but stresses multiple causes and interconnectivity (Cohen et al, 2011: 30). Its emphasis on self-organisation often results in research partnerships or teachers acting as researchers (ibid). The role of teachers in

running the workshops and the collection of their feedback to help develop the methodology conforms to this particular model. Additionally, all the participants were given a voice in the project to ensure multiple perspectives were represented. The interdisciplinary nature of the project is also a reflection of the complexity evident in the research. This subject could not adequately be investigated by using knowledge from one discipline; it required multiple perspectives that were best provided by combining expertise from different fields.

### **3.2.2 Grounded Theory and Educational Research**

Grounded theory has become a popular theory for social researchers studying human interaction using qualitative data (Denscombe, 2014: 106). Rather than conducting research to test out theories that have already been developed it is an approach that aims to generate theories from the data. Theories are developed on the basis of empirical research; they emerge from the data (Cohen et al, 2011: 598). It is therefore research that uses an inductive method of reasoning in that it does not start with a hypothesis that has been logically deduced from a premise (as in deductive reasoning), but develops a theory based on the evidence of the data. Glaser and Strauss (the originators of grounded theory) were reacting against what they viewed as the generally speculative theories produced through a deductive method (Denscombe, 2014: 115). However, grounded theory research can also switch from inductive to deductive methods as researchers 'move between creating inductive categories and making deductions about them' (Charmaz, 2014: 243). Therefore, as Strauss and Corbin argue (1998: 137), there is 'an interplay' between them, which is recognition of the human element in research as any researcher will be influenced by their own assumptions and experience of life, but any interpretations or hypotheses must be continually validated by the researcher through comparing data.

Grounded theory is often used for small-scale research and involves a continual process of comparing ideas that have emerged from previous data with existing data, then checking emerging ideas against new data that will have been collected



specifically for this reason (Denscombe, 2014: 107). Denscombe likens it to a detective's investigation with each new stage reflecting what was previously discovered and leading to 'new angles of investigation' being opened for exploration (ibid). Consequentially, this means the researcher cannot have a precise idea of exactly how many people or who will be included in the research at the start of the project, it is research that starts out with an open mind (ibid). As with complexity theory, Glaser and Strauss argue 'that the world which participants inhabit is multivalent, multivariate and connected' (Cohen et al, 2011: 598). It is therefore a theory that is appropriate when the viewpoint of multiple participants is being investigated and focuses on human interaction reflecting grounded theories roots in symbolic interactionism (Denscombe, 2014: 109).

It could be argued that this research project is not using a strict grounded theory approach as it is based on previous research and there is a hypothesis that is being investigated. However, as Strauss and Corbin (1994: 273) explain, researchers can use theories based on their previous research in current studies as part of a grounded theory approach, so long as it is rigorously tested against data. Therefore, grounded theory still had a significant influence on the methodology for this project, especially in terms of explicating categories from the data, which were used to develop theories that have been tested and refined through each subsequent phase. As advocated by Olson and Raffanti (2004) in relation to grounded learning, reflective practice was used as a tool for developing new ideas and theories throughout the research process, predominantly through writing in a research journal that was used for recording field notes and analytical memos, which is a common practice for analysing codes in grounded theory research.

Grounded theory research (see Strauss and Corbin, 1998; Charmaz, 2014) uses a process of theoretical sampling, as well as coding procedures for analyzing data in order to develop categories. In grounded theory 'coding means that we attach labels to segments of data that depict what each segment is about' (Charmaz, 2014: 4). These are developed into categories, which Bryman (2012: 709) defines as representing a link between initial coding and the development of a theory. At this

point initial reflections on codes have turned into something more conceptual. Development of such categories is often done by writing reflective memos on the initial codes as well as any comparisons made between them. These are 'analytic notes' (Charmaz, 2014: 4) about the codes 'and any other ideas about our data that occur to us' (ibid). According to Strauss and Corbin (2015: 58) this is an exploratory process that evolves over time 'before finally arriving at an interpretation' (ibid). Theories are then generated from these categories and concepts that are tested until a point of saturation has been reached.

This point of 'theoretical saturation' is achieved largely through 'theoretical sampling' to add to the data until no new insights, codes or relationships appear to be emerging (Cohen et al, 2011: 601). This type of sampling was important for the development of the phases for HL2 doctoral project as will be discussed in section 3.3.1. Theoretical sampling provides a focused strategy for the collection of data 'by sampling to develop the properties of your categories until no new properties emerge' (Charmaz, 2014: 192). This will depend on the categories that emerge from the data, which happens by different methods of coding the data and involves producing 'a new understanding that explores similarities, differences, across a number of different cases' (Cohen et al, 2011: 599).

In typical grounded theory there are three main ways of coding, which are 'open', 'axial' and 'selective' coding (Cohen et al, 2011: 600). However, Charmaz (2014) divides coding into two main phases, 'initial' coding (involving open coding) and 'focused' coding, which involves axial and 'theoretical' coding. The initial stage involves an open development of codes through 'a close reading of the data' (ibid: 114) by labeling particular themes, threads or what Charmaz (ibid: 113) refers to as 'the bones of your analysis', which 'shapes an analytic frame from which you build the analysis (ibid). In the more focused phase the most significant or reoccurring codes are selected and used to help 'sort, synthesize, integrate, and organize large amounts of data' (ibid). However this process involves more than the selection of significant codes, it is a process of comparison between codes and assessment of their 'conceptual strength' (ibid: 140). It is a process in which one

can consider codes 'that may be promising tentative categories' (ibid). Axial coding involves a further refining of this process by relating the different codes and categories to each other; it is about looking for the 'interconnectedness of categories' (Cohen et al, 2011: 600). Finally, as part of selective coding, the most significant codes are tested and refined throughout the research and then through 'theoretical coding' the relationships between the codes can be analysed and 'integrated into a theory' (Charmaz, 2011: 150).

Grounded theory then provided a means for the data in the HL2 doctoral project to be analysed (see section 3.3.3) through a process that became gradually more focused by developing initial codes (from the open coding phase) into categories through constant comparison and reflection. Additionally, grounded theory provided a methodological rationale for an exploratory approach to the project, allowing the structures and foci to change depending on what was suggested by the data. As is outlined in section 3.3.1, this resulted in the gradual narrowing of foci in each phase of the research and influenced the approach to sampling as well as the analysis of the data. Additionally, new aspects of theory were developed from the data and tested in the subsequent phases.

### **3.2.3 Research Design: Case Study approach**

A case study approach is appropriate when researchers want in-depth analysis of a particular situation and the processes and relationships at work within that situation (Denscombe, 2014: 55). For this reason it is particularly relevant for research influenced by complexity theory (Morrison, 2006: 4) as it can observe individuals within a natural setting and take in multiple perspectives. It could also be appropriate for research influenced by grounded theory as it is often used for discovery rather than testing an established theory, although it is possible for it to be used in both these scenarios (Denscombe, 2014: 57). However, case studies should begin with thoughtfully posing a research question and objectives (Yin, 2009: 3), which could conflict with the more open approach of grounded theory (Denscombe, 2014: 110).

Yin states (2009: 9) that case studies are appropriate when the research question has the form of 'how' or 'why' something happens rather than 'what', 'who', 'where' or 'how many' type questions, which are more suitable to other research methods. Therefore, it was viewed as an appropriate method for the HL2 doctoral project in which one of the principal research questions is:

*How can heightened listening be developed to aid creative practice and thereby influence primary school children's engagement with sound-based music?*

### **Triangulation**

Triangulation can 'be defined as the use of two or more methods of data collection in the study of some aspect of human behaviour' (Cohen et al, 2011: 195). It has become an important idea in mixed methods research as it proceeds from 'the premise that a research topic can be better understood if it is viewed from more than one perspective' (Denscombe, 2014: 154). Case study research in particular can enable such triangulation as while, in part, it is 'an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context' (Yin, 2009: 18), it is also one that 'relies on multiple sources of evidence' (ibid). This allows for a pluralistic approach to research that can incorporate different methods and sources of data.

In the HL2 doctoral project observations, questionnaires, teacher feedback, audio recordings, written work and compositional work were all used as data and represent multiple sources (see section 3.3 on data collection). This is known as 'data triangulation' (Denscombe, 2014: 154) and it gives the results greater validity as they can be supported by different sources of information. One method or source could result in a distorted perspective of a situation (Cohen et al, 2011: 195) and triangulation allows the researcher to move towards a more complete picture, although Denscombe (2014: 157) stresses that this does not mean the researcher 'will have covered all the angles'.

## **Case studies and generalisation**

However, one criticism of case studies is that an in-depth investigation of a singular phenomenon results in findings that relate directly to that particular situation so cannot be generalised to other instances (Pring, 2009: 41). Although, as with experiments, multiple case studies can be conducted to see if results will be replicated in different situations (Yin, 2009: 15). Despite the desire of the HL2 doctoral project to give voice to multiple perspectives and understand situations that are unique and complex, there are, as Pring argues (2009: 41), aspects of situations that are shared with others and commonalities do exist between different individual voices. This provides room for the possibility of developing theories that can have a general application. This is what is called 'analytic generalisation', which is often contrasted with 'statistical generalisation' (Yin, 2009: 38), which would typically be used in survey research.

Analytic generalization enables a theory to be tested by comparing the empirical results of a number of case studies to see if the results are replicated in different studies. Each case study can help reveal other cases in which 'the results are generalisable' (Yin, 2009: 43) as opposed to survey research where a sample might be generalised to a wider 'universe' (ibid). Analytic generalisation can therefore be a useful approach when testing theories by conducting multiple case studies. Of course, as with grounded theory, a theory might emerge from an initial case study, which then needs to be tested rigorously by conducting subsequent case studies or phases as happened on the HL2 doctoral project.

Additionally, Pring (2009: 41) argues that case studies can be a tool of researchers using a grounded theory approach in that it allows the data to speak for itself and allows theory to emerge out of the investigation. Yin (2009: 18) also defines case studies in terms of aiming to understand the relationship between the context and the phenomena being studied, so a case study method is useful for understanding the influence of context on the subjects of study. This is one reason why it is particularly apt for research that is influenced by complexity theory, in that it can provide a more holistic view of a particular situation. It therefore provided an

appropriate method for the HL2 doctoral project as it was able to support the different research theories that underlie the project. Although often associated with qualitative research it can be used to provide quantitative evidence, so is suitable for a mixed methods approach (Yin, 2009: 19).

### **3.2.4 Summary**

Section 3.2 has examined the different theories underlying educational research that have provided the basis for the development of the methodology for this project. The way this was applied in practice will be explained in section 3.3. The research is primarily influenced by interpretive approaches but has used quantitative methods where appropriate. Therefore, it is not concerned with the divide in educational research that Pring (2009) describes, but rather choices have been made based on which method will be most effective in practice. In particular, ideas from complexity theory and grounded theory were combined to guide the development of the research methodology, which employed multiple case studies that were designed to support pluralistic viewpoints. The aim was to produce a methodology that facilitated creative freedom while providing a structured framework of workshops through which pupils could progress. Individuals and groups were not only observed as separate units but as interconnected parts of a system, as is commensurate with research projects influenced by complexity theory. Additionally, in line with a grounded theory method, analysis of results and observations were combined with reflective practice to develop theories that emerged from each case study and were further explored in subsequent phases. The next section will discuss the principal aspects of the research design, which were developed in reference to the theories examined in this section.

## **3.3 Research Method**

Once the philosophical grounding for the project had been established (as outlined in section 3.2) the design of the methodology was commenced. In accordance with the underlying research philosophies decisions were made in relation to sampling,

which considered questions such as the type of schools (for example, state or private), age group and the sample size. Additionally, methods for collecting data were also determined and ethical issues considered ensuring that the research conformed to the ethical guidelines established for educational research (see BERA, 2011) and could be approved by the relevant faculty research ethics committee. In conjunction with this, a series of workshops were devised that were guided by the social constructivist educational theories that underpin the research (outlined in section 2.2) and that aimed to foster creativity with sound. It was intended that these workshops could provide a model for other educators and researchers to use for introducing sbm into primary schools. This section will describe these different aspects of designing the methodology in more detail.

### **3.3.1 Determining Sample Size and Type**

The HL2 doctoral project leads on from the research carried out in the HL project, which focused on Key Stage 3 (11-14 year olds) children. In the HL2 doctoral project it was decided to work with Key Stage 2 (7-11 year olds) children in part because at an earlier age children might be more open to new ideas about music. This is indicated by the 'open eared hypothesis' (Hargreaves 1982: 51), which suggests that younger children might be more open to unconventional music than older ones. The hypothesis was first linked to electroacoustic music by Wolf (2013) in research with Key stage 3 (11-14 year olds) pupils (see section 2.3.1). Following the work by Hargreaves, the open eared hypothesis was researched by LeBlanc et al (1996) in the US, who found that openness to art music peaked at grade 5 (10-11 year olds), then declined significantly as children enter adolescence before increasing in later teenage years. While a survey of studies by Hargreaves et al (2006) seems to support this, Kopiez and Lehmann (2008) conducted a study in which such preferences are less clear, suggesting that more data needs to be collected to establish the validity of the open eared hypothesis.

However, other research has indicated that music becomes more related to identity as children become adolescents (see Hargreaves and Marshall, 2003; North and Hargreaves, 1999). This means that by adolescence they could be less

likely to be open to unusual forms of music (such as sbm) that do not fit with their perceived musical identity than younger children who do not yet have as strong a sense of such an identity. Therefore, it was decided to focus the research on a younger age group to investigate if this influenced levels of engagement and also because much recent research involving electroacoustic music in schools in the UK and Ireland, such as Wolf (2013), EARS 2 and Higgins (2004), has focused on secondary school groups.

As the HL2 doctoral project used a grounded theory approach, the size of the sample was determined by the point of saturation. In grounded theory this is reached when it is felt that no new categories and relationships are emerging through the use of theoretical sampling. This type of sampling is based on the concepts that develop from the data meaning that sampling is an evolutionary process rather than predetermined before the start of the research (Strauss and Corbin, 1998: 202). In order to increase the validity and make the project as transferable as possible, multiple case studies were conducted in eight different schools across the three phases.

### **Phase 1**

In phase 1 an open approach was taken to sampling and a wide range of primary schools were contacted to investigate what different themes would emerge. According to grounded theory, it is important for the researcher to be open to all possibilities during this open sampling phase (Strauss and Corbin, 1998: 206). While it was inevitable that provisional ideas, such as working with Key Stage 2 children, determined the sample to a degree, as far as possible, it was important to keep an open mind and treat such provisional ideas as starting points (Denscombe, 2014: 109). As a result, case studies were run in both state and private schools with a variety of cultural and socio-economic backgrounds across the Midlands.

Including this range of schools also provided the opportunity to compare schools where the case studies happened within a timetabled music lesson with those that did not. In some of these schools the workshops were the main opportunity the children had to make music within the school curriculum and many of the children



had not formally learnt an instrument. This means that a significant proportion of the participants became what has been described as 'non-traditional music' (NTM) students (Williams, 2011) through their participation in the workshops.

This term (NTM) has been used to describe secondary school students in the US who do not participate in traditional music ensembles or read music notation but are engaged in musical activities through using technology to record, perform and compose (Williams, 2011: 131). Such children often are interested in music but this interest is independent of their life in school (ibid: 137). Williams suggests that music technology offers opportunities for making music to children who previously would have been alienated or excluded from traditional music education, arguing that music technology has 'democratized music creativity' (ibid: 136). In this sense the creative potential of music technology can challenge conceptions of musical creativity as an 'attribute of a privileged genetic elite of individuals who are born to be musicians' (Burnard, 2011: 158).

There is also evidence that NTM students benefit motivationally from engaging with music technology, in part due to the 'hands on' nature of such activities (Williams, 2011: 142). This is supported by research conducted in the UK that provides evidence of such benefits (for example, see Savage, 2002; Burnard, 2011) and the wider academic benefits of creating technologically based sbm was mentioned by teachers in the HL2 doctoral project (see chapter 4). The HL2 doctoral project aimed to harness the inclusive potential of sbm to provide opportunities for children with all levels of musical training to be creative with sound, meaning that while this research's focus is with primary school children in the UK, there could be similar benefits to those identified for NTM students as defined by Williams.

Table 3.1 on the following page provides information on the sample for phase 1.

**Table 3-1 Sample for phase 1**

<b>Phase 1</b>						
<b>School</b>	<b>Type</b>	<b>Profile</b>	<b>Number of children eligible for free meals</b>	<b>Part of music lesson ?</b>	<b>Age</b>	<b>No. of pupils</b>
<b>A</b>	State	Average sized primary serves mainly Asian community	Below average	Y	7 - 9	33
<b>B</b>	State	Community school mainly White British	Below average	N	9 - 10	21
<b>C</b>	State	Larger than average, wide range of ethnic backgrounds	Average	N	8 - 9	9
<b>D</b>	State	Smaller than average, 4/10 pupils from ethnic backgrounds	Above average	N	9 - 10	20
<b>E</b>	State	Larger than average, majority of pupils from Indian background	Above average	N	9 - 10	30
<b>F</b>	Private	Small private – wide range of ethnic and social backgrounds	Below average	Y	10-11	16
<b>Totals</b>	6 schools					129

## Phase 2

In phase 2 the focus was narrowed to Year 5 and 6 children in schools with an adequate level of ICT facilities as well as teacher support in order to further explicate the core categories that emerged from phase 1. This phase entailed what Straus and Corbin (1998: 211) describe as 'discriminate sampling', which is 'highly selective' (ibid) and in this project provided the opportunity to validate or negate categories that emerged from the first phase. The decision to narrow the focus of the sample was due to two main factors, which were:

- **Age** - During phase 1, younger groups had greater difficulty in learning how to use the technology involved in the workshops. In contrast, only one Year 6 had been involved and they had shown a greater ability to learn to use the technology.
- **Teacher's contribution** - Some teachers were absent for a significant proportion of the workshops in phase 1 and teacher support was seen as an important factor in the success of the project both in terms of data collection (teacher feedback) and in facilitating engagement.

As a result of these factors, the sampling was more selective in phase 2 and schools were chosen that met the following criteria:

- To work with Year 6 or Year 5 groups
- That the teacher would be able to attend the majority of the sessions in order to support them.

Workshops were conducted in two schools in the West Midlands; school H involved three separate classes of mixed Year 5 and 6 children. The following table provides information on the sample, which was less diverse than in phase 1.

**Table 3-2 Sample for phase 2**

<b>Phase 2</b>						
<b>School</b>	<b>Type</b>	<b>Profile</b>	<b>Number of children eligible for free meals</b>	<b>Part of music lesson ?</b>	<b>Age</b>	<b>No. of pupils</b>
<b>G</b>	State	Smaller than average catholic primary, 20% ethnic minorities	Well above average	N	10-11	22
<b>H</b>	State	Larger than average, mainly White British	Well below average	Y	9-11	90
<b>Totals</b>	2 schools					112

### **Phase 3**

In phase 3 the focus was narrowed even further to a small group of selected Year 6 children from school G who had all participated in Phase 2 (they were selected by the teacher as children who were particularly engaged in phase 2) in order to investigate further theories that had emerged from the previous phases. This phase represented the culmination point of the project after theoretical saturation was reached as explained in section 3.2.2. Theoretical sampling involves selecting a particular sample in order to test concepts and theories that are emerging from the data until saturation is reached, ‘when the new data seem to confirm the analysis rather than add anything new’ (Denscombe, 2014: 110).

For phase 3, the sample was chosen in order to further test data that emerged from the previous phases, which indicated that children compose sbm in different ways according to their abilities, skills, experience and interests. In phase 3 the children had the option to engage in different activities depending on what type of listening was most helpful for them in order to support their creative practice and structure their compositions. This related to the theory of the heightened listening scale (see

section 4.4) that emerged from the data from phase 1 and 2, phase 3 aimed to investigate this theory further.

**Table 3-3 Sample for phase 3**

<b>Phase 3</b>						
<b>School</b>	<b>Type</b>	<b>Profile</b>	<b>Number of children eligible for free meals</b>	<b>Part of music lesson ?</b>	<b>Age</b>	<b>No. of pupils</b>
<b>G</b>	State	Smaller than average catholic primary, 20% ethnic minorities	Well above average	N	10-11	5
<b>Totals</b>	1 school					5

Overall 241 children participated in the project across the three phases, but of those 221 were present to complete the questionnaire in phases 1 and 2 (there was no questionnaire in phase 3). The next section will examine how the workshops were designed and developed through the project.

### **3.3.2 Designing the Workshop Structures**

In accordance with grounded theory, just as the sample size was not fixed at the start of the project, developing the workshop structures was also an evolutionary process. However, a basic framework was established at the start of phase 1 that remained in place throughout the first two phases. The development of these workshop structures was guided by the underlying theories of social constructivism and creativity in education discussed in section 2.2. Participation was the central guiding principle in their development, as, in accordance with social constructivism, the learning was intended to be active and practice led. Even where the children worked individually they had plenty of opportunities for

sharing ideas with peers and receiving advice from the researcher as well as teachers. Compositional practice was enhanced through enabling the children to make music using digital technology, which, as is argued by Burnard (2011), has the potential to foster musical creativity in ways that traditional music education does not. Additionally, in line with recommendations for aims and objectives in lesson planning (see Cohen et al, 2004) each workshop was designed to work through various activities to help achieve particular objectives that could help contribute towards an overall aim of completing the compositions, which were performed in a concert in the final workshop. The intention was that this concert would help to motivate the children to do their best work.

Motivation for music making activities is complex and depends on the interaction of a range of environmental factors and personal characteristics (Hallam, 2002). For such activities to be intrinsically motivating they need to be challenging but not beyond the person's abilities, if the task is too easy then there is a tendency to become bored but if it is beyond their capabilities then anxiety is created (ibid: 228). Trying to get this balance right for the different levels of ability of participants in the HL project was one of the challenges in designing the workshops. Approaches for dealing with this changed and depended partly on the teacher as well as the previous knowledge and experience of the pupils in each school. For example, in school H (see section 4.3.3) the children had a high level of ICT literacy and therefore required less initial guidance than in some of the other schools.

However, it was always the intention to allow a balance between guidance and creative experimentation or play, aiming to not restrict those who were most confident and give sufficient support to those who struggled. This topic of 'freedom and constraints' in composition is one that causes debate throughout music education (Burnard and Younker, 2002). Research has suggested that students compose in different ways (findings that parallel the HL scale as explained in section 4.4) and how freedoms and constraints affect individual students is 'firmly rooted in their musical biographies' (ibid: 257). As a result, the workshop

structures needed to be flexible enough to be able to adapt to the different needs of the participants, meaning that the lesson plans could not be too fixed.

The aim of the research was to first raise the sonic awareness of children through listening exercises and a soundwalk and then develop this listening practice into a compositional tool. The participants were encouraged to listen as composers, as advocated by the composer Michelle Nagai (2011) and explained in section 2.5, both in terms of choosing sounds to record and when making decisions about how to manipulate and arrange the sounds in compositions. Additionally, by using written work (as well as drawing) to help students explore their imaginations through sounds, the research aimed to further develop HL as a way that non-specialist listeners can positively experience sbm. The initial intention was that imaginative exercises could be used to help the pupils creatively explore sounds and establish a narrative or theme, which could act as a useful guide for organising their compositions. Additionally, in keeping with the social constructivist philosophy of the research (as well as effectively balancing freedom and constraints), the children had creative freedom to make their own compositional choices, but they were also closely guided and supported throughout the different stages and restricted to using only a certain number of sounds from the sound bank.

### **Role of the teacher**

Initially, the intention was that the class teacher would lead the workshops and the researcher would take on the role of an observer. It was hoped that this would have two principal benefits, firstly allowing the researcher to concentrate on observing the children's responses to the workshops and secondly to demonstrate that teachers could run the workshops themselves without the necessity for prior expertise. However, in practice this was difficult to organise as the teachers were often too busy to prepare for the workshops alongside other lesson planning. As a result the researcher usually led the workshops with the teacher's support, although this was also problematic in some schools due the unforeseen absences of teachers. The researcher thus took on the role as a participant observer (Cohen et

al, 2011: 465). The teachers also provided feedback on the project and this was a valuable source of data (see section 3.3.3).

A common topic in the discourse on music education in primary schools concerns issues relating to generalist or specialist music teachers (for example see Holden and Button, 2006; Seddon and Biasutti, 2008). Many non-specialist class teachers are expected to teach music and the majority of teachers involved in the HL2 Doctoral project fell into this category. Difficulties that arise from this often relate to a lack of confidence in teaching music by generalist teachers (see Seddon and Biasutti, 2008), as they feel they do not have the required 'musical gift', expertise or knowledge. However, just as sbm offers an opportunity for pupils of all abilities to engage in creatively working with sound it also can be taught by teachers without years of musical training or knowledge of music theory. Support for using generalist music teachers has proposed that 'just as music should be for all children, it also should be for all teachers' (Wiggins and Wiggins, 2008). While, in particular, issues relating to confidence have arisen in connection with this in note-based music, it is possible to start exploring the creative potential of sbm without an in depth knowledge of sbm theory or the repertoire. It might even be that such generalist music teachers are more willing and open to making music with sounds (as they have not invested so much time and effort in developing expertise in note based music) and explain why majority of teachers interested in taking part in the HL2 doctoral project were not music specialists.

However, just as sbm will usually be an unfamiliar form of music to the pupils it will also be for the majority of teachers (including many specialist music teachers). This means that support for the teachers is required, not only in terms of resources (such as software) but also understanding. In terms of Piaget's theory (see section 2.2.1) they might not have developed the relevant schema for understanding the concept of sound-based music. This has been observed in a study carried out in relation to the EARS 2 project (discussed in section 2.3.1) by Motje Wolf and Sarah Younie (2016), who concluded that teachers need to develop a 'cognitive



prototype' for sbm in order to teach it with confidence. The teacher pack produced for the HL2 doctoral project aims to support teachers in addressing these issues.

### **Workshop structures (phase 1 and 2)**

In the section below a basic outline of the workshop structures used in phase 1 and 2 is provided. These represent outlines of the sessions and form the bases of lesson plans that were given to the teachers as part of a 'teacher pack' (see Appendix A) prior to the start of case studies. This teacher pack developed throughout the case studies partly based on issues that arose in the workshops as well as feedback from teachers and is presented in the Appendix as a resource to help teachers run the workshops in the future. It is important to note that these were basic outlines and varied in each case study often in response to the particular circumstances in the school. Originally, it was planned that each case study would include six workshops but this was extended to seven from case study 4 (school D) onwards. This was because it was felt from the experience of the first three case studies that the children needed longer to develop their ideas and learn Audacity.

The workshop structure was intended to encourage the children to follow the framework created by Savage and Challis (2002) discussed in section 2.3.2. The pupils could move through the different stages of composition that included a starting point (recording), experimentation (by learning to use effects), selection of sounds (through using the sound box sheet), structuring and revision. These stages were not necessarily in order and often involved a loop back to different stages. Creating narratives was intended as a way to help guide or offer scaffolding (as in the term discussed in section 2.2.2) for the pupils in developing compositional structures. Below is an outline of the workshops as presented in phases 1 and 2.

## Workshop 1 – Focus on listening

### Learning outcomes

Through participating in this workshop the pupils will:

- Understand the main aims of the workshops and what they will involve.
- Begin to open their ears to the sounds around them through simple listening exercises.
- Engage in focused listening to environmental sounds by participating in a soundwalk in the local area.
- Discuss and reflect on the sounds encountered during the walk and their different characteristics.

### Activities:

**1) Short introduction – concerning listening** - This introduced the pupils to the workshops and the idea of learning to listen attentively.

**2) A minute's listening in the classroom** - This was intended to relax the participants and focus their attention first by listening to their breath then extending this to the sounds around them. Following on from the success of Sound and Music's 'Minute of Listening' campaign in schools (Sound and Music, 2012), the children were then asked to produce lists of the sounds heard. An overall list was then compiled collaboratively, with the whole group encouraged to contribute from their individual lists. This was also inspired by methods used in education by Murray Schafer discussed in section 2.3.3, which are still commonly used in Soundscape education (e.g., see Cumberland, 2001).

**3) Soundwalk** - This was then extended through a soundwalk, as described in section 2.3.3. The children were asked to categorise the sounds using the soundwalk instruction sheet (see Appendix C), simplified and adapted from Westerkamp (2001). This represented a more focused listening than the classroom exercise, encouraging the children to think more about the sound's characteristics

than the first exercise that was largely concerned with identifying the sounds. It also encouraged the children to start evaluating sounds and consider whether they had a negative or positive response to them, which was intended to prepare them for choices they would make later about which sounds to record or include in their compositions. The teacher was asked to lead this prior to the workshop and to plan a route through varied acoustic environments in and around the school. The soundwalk was recorded in case there were any interesting sounds that the children might want to use in their compositions. The soundwalks lasted approximately 10 minutes and beforehand the instruction sheets were explained.

**4) Discussion / writing** – There was a discussion immediately after the soundwalk and a collaborative list was created of the sounds heard in relation to the questions on the instruction sheet.

**Concluding comments** – The class would be encouraged to continue their listening practice outside school.

## **Workshop 2 - Recording**

### **Learning outcomes**

Through participating in this workshop the pupils will:

- Learn to record sounds using a digital recorder
- Collect any interesting sounds they discover in and around the school.
- Begin to develop a reflective listening that uses the imagination through discussion and written exercises.

### **Activities:**

#### **1) Written exercise**

To begin (following on from workshop 1) the children engaged in a written exercise (see below) designed to help them explore a more 'inward' type of listening and consider their responses to the sounds around them. It was intended that through such exercises ideas for themes or narratives within compositions might be developed.

**Exercise:**

*Did any of the sounds on the soundwalk make you think of other things? These could be feelings or anything else they sparked in your imagination. For example, the buzzing of bees might make you think of summer or it might make you think about being stung or it might even sound a bit like motorbikes!*

*Try to think of as many different things that each sound made you think of and then write them out.*

**2) Recording** – In the second workshop the children were given the opportunity to record sounds using digital recorders in groups; the choices they made were informed by their listening and suggestions made by the teacher and researcher. These recordings were edited after this workshop by the researcher in order to provide material for the pupils to work with in the following workshops. By phase 2 it became apparent that similar generic sounds were often recorded (for example, the sound of footsteps) and, as a result, some of the sounds recorded in phase 1 were used as part of a sound bank used in phase 2. This meant that the children had access to a certain number of sounds that represented their particular school as well as some generic sounds from the sound bank.

### **Workshop 3 – Introducing Audacity**

**Learning outcomes**

Through participating in this workshop the pupils will:

- Be introduced to the concept of creating music using sounds rather than notes.
- Learn simple audio processing techniques using audio editing software.

**Activities:****1) Listen back to sounds edited from the recordings made the previous week**

– The researcher edited out a selection of sounds from the recordings made by the pupils in workshop 2. These were played back to the children as a compilation at the start of workshop 3.

**2) Listen to short examples by Sound-based composers e.g. Hildegard Westerkamp – short excerpts from *Kits Beach Soundwalk* or *Cricket Voice*.**

The concept of sbm was introduced with the help of some brief examples, before beginning experiments with the sounds recorded the previous week using audio-editing software (Audacity). This was intended to introduce the pupils to the idea of making music with sounds. It was thought (based on experience from the HL project) that using the term ‘music’ too early in the workshops could potentially lead to some confusion and even resistance. Therefore, it was believed that it was more appropriate to introduce this after they had developed some appreciation of listening to environmental sounds and their different qualities. Earlier in the workshops reference was made to creating ‘sound stories’ or ‘making art out of sound’ rather than using the term music.

**3) Sound experimentation and simple processing** - For the remainder of this workshop the pupils experimented with using Audacity (either individually, in pairs or in groups depending on the ICT facilities of each school). Editing techniques were demonstrated and they were shown how to loop sounds, as well as simple processing techniques such as reverse and delay.

## **Workshop 4 – Reviewing sounds**

### **Learning outcomes**

Through participating in this workshop the pupils will:

- Further develop their audio processing and editing skills by continuing to experiment with sounds.
- Learn to formulate ideas for compositions by reviewing and selecting sounds in reference to ideas for themes or narratives.

**Activities:**

**1) Review sounds** - They were asked to review the sounds provided for them and choose a selection of approximately five that they could start working with to create compositions. The choices made could have been in reference to a narrative or theme or just because they liked a particular sound.

This exercise was developed throughout phase 1 and from case study 3 onwards the children worked through a sound box sheet while listening to each sound and ticked whether they liked or disliked the sound.

**2) Further experimentation with sound processing** - The children would then start to experiment with these sounds in Audacity by editing them and adding effects.

**Workshop 5 - Developing ideas**

**Learning outcomes**

Through participating in this workshop the pupils will:

- Continue to develop processing skills by experimenting with sounds chosen in workshop 4.
- Learn how to develop structures for their compositions in relation to narratives or themes that they have created.

**Activities:**

**1) Continue developing ideas in Audacity** - In this workshop the pupils continued to experiment with manipulating the sounds they chose the previous week (additional effects were demonstrated such as changing the speed and reverb).

**2) Develop ideas for themes or narratives** - They were also encouraged to think about how the sounds they had chosen could relate to a theme or a narrative and start to sequence and arrange their sounds in relation to this.

## Workshop 6 – Finishing compositions

### Learning outcomes

Through participating in this workshop the pupils will:

- Further develop their understanding of compositional structure by devising a final theme/narrative in order to provide a framework for structuring their work.
- Develop compositional skills by continuing to arrange, revise and refine their compositions.

### Activities:

**1) Complete compositions** - The children were asked to finish their compositions by refining and revising their work.

**2) Decide on theme or narrative** - Choose a final theme or narrative and if possible write this up on paper or in a Word document.

## Workshop 7 – The concert

### Learning outcomes

Through participating in this workshop the pupils will:

- Develop communication and listening skills through the presentation of compositions in a concert and through the giving and receiving of feedback.
- To develop written communication and reflective skills through completing questionnaires concerning the pupils' experience of the workshops.

### Activities:

**1) Complete the questionnaire** - Before the concert the children completed a short questionnaire, which provided a key source of data for the project (see section 3.3.3). Before starting, the questions were briefly explained and the

children were asked to complete them in silence and alone. It was also emphasised that the questions concerned their personal opinion and that there were no 'right' or 'wrong' answers.

**2) The concert** - This provided a chance for the children to play their compositions to the rest of the class and it was intended that the prospect of the concert provided the children with extra motivation to produce the best work they could. They each explained the theme or narrative before playing their piece. Children were encouraged to comment and give feedback on each other's work, an activity that was in line with the social constructivist philosophy of the research. Other research has indicated that children like the opportunity to discuss their experiences as composers and this also helps them develop a language for doing this (Burnard 2006: 127). Throughout the research it was important to give voice to the children's perspective and discussion was encouraged.

### **Workshop structure (phase 3)**

Phase 3 involved four workshops with five children who had participated in phase 2. The purpose of this phase was to gather more data to test the theory of the heightened listening scale (see section 4.4). The children were required to create new compositions using a bank of sounds. However, in these sessions more emphasis was placed on planning and structuring the work to test if they were more inclined towards using narrative or focusing on the abstract manipulation of the sounds (the two opposing ends of the scale). Below is an outline of each of the workshops.



## Workshop 1 Phase 3 – Recap

### Learning outcomes

Through participating in this workshop the pupils will:

- Further develop their Audacity skills
- Further extend their listening practice
- Understand that attention can be focused on sonic qualities or narrative associations when listening to sbm

### Activities:

**1) Listening exercise** - Short listening exercise involving prepared sound of flowing water with a processed section.

The participants were asked to respond to the following questions on paper using writing and drawings if necessary:

*How would you describe the sound?*

*If you were going to write a story or draw a picture of that sound, what would it be about or what would it look like?*

**2) Remainder of session** - Experimenting with sounds in Audacity, reminders were given about Audacity basics (importing a sound, adding effects, using tools).

### Task for this session:

*Create a new sound from no more than 2 sounds by adding effects, editing or joining sounds together that you like.*

## Workshop 2 Phase 3 – Developing new ideas

### Learning outcomes

Through participating in this workshop the pupils will:

- Further develop their compositional, processing and editing skills using Audacity.

### Activities:

**1) Experimentation** - Experimentation and play in Audacity in order to start generating ideas for their compositions.

**2) Remainder of session** - Examples of simple gestures or musical phrases made from the sounds were played.

### Exercise:

*Pick a sound – then take what you think is the best part of it and copy it, delete the rest. Paste it 3 times, add effects that transform it in different ways.*

They were then asked to consider which sounds and combinations they wanted to use in their compositions, for guidance it was suggested that they use no more than four or five to start with.

## Workshop 3 Phase 3 – Creating a plan

### Learning outcomes

Through participating in this workshop the pupils will:

- Further develop their understanding of compositional structure by creating a plan for their pieces.

### Activities:

**1) Create a plan for compositions on paper** - While referring to their work in Audacity they were asked to produce on paper a timeline for their pieces that

could relate to a story, drawing, graphic score or combination of these to help them structure their pieces. An example of a simple timeline with a corresponding example piece was shown to them at the start.

**2) Using plan to arrange sounds** - Following this they continued to develop compositions in Audacity in reference to their timelines.

**3) Listening back to each other's work** - This was a good opportunity for them to share ideas and be inspired by each other's compositions; it was intended that this activity could support the creation of zones of proximal development.

### **Workshop 4 Phase 3 – Finishing compositions**

#### **Learning outcomes**

Through participating in this workshop the pupils will:

- Further develop their compositional skills and structural understanding by refining and reviewing compositions while referring to their plans.

#### **Activities:**

**1) Finish compositions** - While referring to their plans, (which also evolved) they arranged and edited sounds in Audacity, adding effects where necessary.

**2) 'Vox pops'** – Short informal interviews with each pupil where they described their pieces and how they made them.

## **Concert**

At a later date the compositions were played to the rest of the class. Each pupil introduced their piece and the rest of the class was encouraged to make comments and ask questions. This performed the same motivational role as the concert had in phases 1 and 2 and was also useful in giving the children an opportunity to articulate what they had tried to achieve. It also involved the rest of their class (who had all taken part in phase 2) in phase 3 giving them a reminder about listening practice and sbm, as well as an opportunity to discuss the work of their peers.

The workshops across the three phases provided the opportunity to collect data in order to investigate the principal research questions. The design of the workshops allowed for the collection of multiple sources of data such as the questionnaire and pupil's compositional work. The next section will outline all the sources of data used in the research and how they were collected.

### **3.3.3 Data Collection and analysis**

Data was collected from a variety of sources throughout the research and the majority of it was qualitative in type. Qualitative data usually takes the form of 'words and images (spoken or written) and visual images (observed or creatively produced)' (Denscombe, 2014: 276). This might be in the form of observation reports, interviews or open-ended questions as part of a questionnaire or more anecdotal sources such as conversations, field notes or emails (Cohen et al, 2011: 537). Quantitative data takes the form of numbers and statistics and can include closed-ended questions in a questionnaire (ibid: 250). Below is an outline of the types of data collected for the HL2 doctoral project.

#### **1. Questionnaires**

The questionnaire designed for this research used a mixture of open-ended and closed questions, so therefore produced a combination of qualitative and quantitative data. The open-ended parts of the questionnaire were designed to encourage reflection and provided an opportunity for the participants to express

themselves in more detail in relation to the workshops. However, one of the disadvantages of open-ended questions is that respondents might be unwilling to write a detailed answer (Cohen et al, 2011: 209) because they require 'more effort on the part of the respondents' (Denscombe, 2014: 176), which could influence their engagement with the process. Due to this factor and the young age of the participants, it was decided that the questionnaires needed to be concise and simple enough for the children to maintain concentration while still providing data useful for the purposes of the research. Also, open questions can result in answers that are ambiguous and difficult to analyse, so it was decided to balance this with some closed questions, which provide answers that are easy to categorise and quantify (ibid), around key issues such as listening and engagement. However, answers to these closed questions all required explanation and one of the advantages of questionnaires is that they allow a mixed method approach (ibid: 29), thus helping to ensure methodological triangulation and facilitate a clearer understanding of the participant's views.

The questionnaires were completed by the children in the final workshop and included the questions shown in Figure 3.2 (question 3 was included from case study 3 onwards as there was a concern that more data was needed on the children's view of the listening practice than had been gathered in the first two case studies). A completed example of a questionnaire is shown in Appendix D.

## Listening workshops questionnaire

**NAME:**

- 1) What did you like about doing these workshops? 😊
  
- 2) What did you not like? ☹️
  
- 3) Do you think the listening practice helped you to create your sound stories? **Yes/No** (please circle)  
If yes, why? If no, why not?
  
- 4) Would you like to make a sound story again in the future?  
**Yes / No** (please circle)  
If yes, why? If no, why not?

Figure 3-2 Workshop questionnaire

The purpose of this questionnaire was to ask the children to reflect on what they felt were the positive and negative aspects of the workshops. The first two questions were quite general and were concerned with their engagement with the whole experience, while questions 3 and 4 were more focused and specific in order to collect data on the children's view of the role of listening in the composition process and their engagement with creating sbm.

One of the disadvantages of using questionnaires is that they can be limited in scope (Cohen et al, 2011: 377) and lack depth or detail (Denscombe, 2014: 30). Additionally, as has been noted by other studies on music appreciation (Kopiez and Lehmann, 2008: 136), one of the issues with questionnaires in schools is that participants might be influenced by how they think the teacher might want them to answer, rather than providing their own honest opinion. To try to overcome this

the pupils were asked to explain answers to each of the closed questions. Also, it was emphasised to the children that there were no correct answers to the questionnaire and that they should give their own opinions. This is also why data triangulation was important for the research, in order to provide a variety of sources to help corroborate the findings. In particular the responses to the questionnaires were triangulated with observations made by the researcher and teacher feedback, which will be discussed in the next two sections.

## **2. Observational and reflective reports**

Observation has a long history of use within educational research and can be structured or unstructured in form (Punch and Oancea, 2014: 193-194).

Qualitative research often uses more unstructured observations that typically sharpen in focus as the research progresses (ibid: 196). Although much observation involves recording data within a particular setting on activities and events that are taking place, researchers can also observe while being a participant in the activities themselves. This is called 'participant observation' (Cohen et al, 2011: 464) and requires the researcher 'to balance participation in order to absorb the situation, with sufficient detachment to be able to analyse and observe in a detached way' (ibid). This can be time consuming and means the researcher needs to write up field notes after the activity has taken place.

The HL2 doctoral project used this participant observation approach through the completion of reports that were designed at the start of the research and included a series of open and closed questions. These reports were a mixture of observation (recording facts such as number of pupils, comments made by participants, significant events) and reflection on those observations. These were completed after each workshop from standard templates (see Appendix F) yielding predominantly qualitative data (see Appendix G for a completed example). These templates included questions, which were in part influenced by complexity theory, which prompted reflections on the response, behaviour, interaction and engagement of the participants in order to report on the complex web of interacting factors that could be influencing the workshops. These templates were

adapted for phase 3 of the research in order to focus on specific categories that had emerged. The templates provided room for general observations and reflections to emerge as well as directing the attention of the researcher on particular factors, such as the reaction of pupils to particular exercises.

In the HL2 doctoral project the researcher could be classed as an 'observer-as-participant' who participated in the activities but whose role as a researcher was clear (Cohen et al, 2011: 457). This type of observation can be 'particularly useful in studying small groups' and for situations when it is important for the researcher to understand what is happening in detail (ibid: 465), which is true of the type of educational contexts investigated in the HL2 doctoral project. Participant observation enables the researcher to collect data that has depth and detail; to pick up on 'the complexities and interconnectedness of the cultures, lifestyles and beliefs being investigated' (Denscombe, 2014: 215). It is therefore a good approach for research influenced by complexity theory. The observation reports were supported by field notes that were recorded in a notebook immediately after workshops took place in order to ensure that as much detail as possible was recorded. This represented a comprehensive summary of what took place in each workshop, particularly focusing on the pupil's responses and behaviour but also included reflections on themes that were emerging in the research that could be further investigated.

One of the issues in terms of the reliability of observations is that the presence of an observer might influence the behaviour of the participants (Cohen et al, 2011: 210). A way that this can be overcome is by conducting tests in multiple sites, as was done by the HL2 doctoral project, to investigate if the results support each other, as it is less likely that participant's behaviour will be influenced in the same way by an observer in multiple contexts. Additionally, data and methodological triangulation (as used in the HL2 doctoral project) are also a means to address issues of reliability and validity with observation data (ibid).



### **3. Teacher Feedback**

This was qualitative data provided by teachers at the end of each case study particularly in relation to the children's level of engagement; this was informal and collected through conversations or provided via email. General questions or foci were suggested to the teachers for feedback in each case study, such as the pupil's engagement with the process and the role of the listening practice, but the feedback was predominantly unstructured and open to allow the teachers to express themselves as fully as possible. Sometimes particular issues were asked about in a case study that were relevant to that school so as to provide as detailed a view as possible for each case study.

### **4. Children's work**

This included pieces of writing, drawings, recordings and compositions. As the focus of the HL2 doctoral project was on investigating creative practice as a means for facilitating engagement, the approaches used by the children to complete their work as well as the level of accomplishment provided interesting data. The compositions were not assessed within the workshops but a high level of accomplishment in the creative work was interpreted as an indicator of engagement in the process.

Judgements about musical accomplishment were based partly on the level of technical sophistication of the work (for example, how many effects were used and was there evidence of experimentation with the different parameters within those effects) but also sophistication in the musical arrangement and structure. For example, did the pupils make use of methods such as loops to create rhythms or layering to create new textures? Did it appear that the pupils had considered contrast or similarity in spectral content in the way they arranged and manipulated sounds? Had they considered the dynamics of their piece? Did the piece have variation? These are questions that might apply to pieces of note-based music but are also very relevant when creating a piece of sbm. This was communicated informally during the process of composition as part of suggestions to help pupils improve their work. It was also communicated, when time

permitted, during the concert in the final workshop.

## **5. Recordings of the workshops**

Each workshop was recorded for future reference as well as the 'vox pops' or short interviews recorded in phase 3. As suggested in educational research guidelines for interviewing children (Punch and Oancea, 2011: 191), these interviews were unstructured, phrased in appropriate language for the participants and conducted in a natural setting. This source of data was useful in supporting the observations and the use of such technology helps to overcome the limits of the observer's partial view of a particular event (Cohen et al, 2011: 470). However, it was decided not to use video to record the workshops. While there are advantages to having such a record, it was decided that this could also influence the naturalness of the setting and affect the pupils' behaviour. Additionally, a fixed camera can be selective as it is unable to focus in on particular activities (or alternatively, if it does, it will be unable to provide a panoramic view) or turn towards certain events in the way an observer is able to (ibid).

## **6. Other Documents**

Additionally, *inspection reports* for each school were used as a source of information particularly in reference to the culture and socio-economic profile of each school. *Photographs* were also sometimes used where necessary to record information such as listening lists made on whiteboards and the layout of particular rooms. These were useful reminders and are commonly used in educational research as they can convey much more than words alone (Cohen et al, 2011: 529). However, visual images can display the world in particular ways (Punch and Oancea, 2014: 208) that are open to multiple interpretations and so photographs were not taken of the children themselves in the workshops, which would also have required extra ethical approval. However, in one case study the teacher used an ipad to photograph the children at work for use at a parents evening. These were shared with the researcher with the consent of the school, but no images will be published or shared in relation to the research where the children can be identified.

## **Analysis and Evaluation of the data**

Qualitative data takes many forms and the 'raw' data needs to be organised and processed before it can be ready for analysis (Denscombe, 2014: 276). This involves protecting the data, meaning back ups must be made and cataloguing the data with a reference system in order to move back and forth between different sections (ibid: 277). These steps were taken in the HL2 doctoral project, although this was ongoing as the data was reviewed and analysed throughout each phase in line with the grounded theory approach. In grounded theory it is first necessary for the researcher to develop a high level of familiarity with the data by immersing oneself in it (ibid: 285).

In the HL 2 project the data was coded and categorised throughout each case study, this was mainly in relation to the questionnaires but codes were also applied to the teacher feedback. However, as an 'observer as participant' the researcher was immersed in the experience of the workshops, which was reinforced through the writing of field notes and observation reports that were regularly reviewed. The work produced by the children was also categorised in order to investigate, for example, uses of narrative or examples of technical accomplishment. These codes and categories were refined as the research evolved.

Additionally, as the analysis developed memos were made, which is a practice common in grounded theory research (Charmaz, 2014: 162). In particular this was done in relation to field notes, participant responses on the questionnaires and behaviour recorded in the observations, in order to record new ideas or insights about the data, which is one of the purposes of memos in grounded theory (Denscombe, 2014: 285). This process was followed in order to work towards the development of theories and concepts from the data, which were further tested in the subsequent phases.

For example, 'fun' was an initial code that was attached to responses to the workshops that described the overall experience as fun or enjoyable. This was because often the pupils in their responses used the word 'fun'. In the open coding phase this was distinguished from positive answers that mentioned using effects

or editing, which were given the code 'manipulation'. However, many of the 'fun' answers were given in response to the question 'would you like to make a sound story again? If so, why?' Therefore they were describing the process of creating a sound story as 'fun'. Similarly, those responses coded under 'manipulation' were also describing this process positively. As a result of the comparison of this data, in the more focused coding stage these were both clustered in the category of creativity, as it was creative activity that was engaging for the pupils in all of these responses. This led to the theory that the main driver for engagement with sbm for this age group is creative activity, something that represents one of the original contributions made by this research (discussed further in section 5.2.1 and 5.3). To provide further insight into how the coding process evolved in the research, Figure 4.15 on page 204 shows a mind map of some of the categories and codes that were developed from the data in Phase 1.

### **3.3.4 Ethical issues**

There is a wide range of literature concerning research ethics that outlines general principles and guidelines to help ensure good research practice (Punch and Oancea, 2014: 58). Such ethical questions should be considered from the research's conception (for example, the choice of the research topic) through to its dissemination (ibid). Therefore, educational researchers need to be aware of such ethical principles and 'the ethical implications of any decisions they make' (ibid: 58) and the British Educational Research Association (BERA, 2011) has produced some useful guidelines for this purpose.

According to the guidelines, participants in research must be respected and treated without prejudice and, in order to ensure this, research should operate on the basis of 'voluntary informed consent' (ibid: 5). This means that participants should not be placed under duress and must understand the process in which they are engaged. Also, they must have the right to withdraw and the wellbeing of the children should be the researcher's primary concern. Additionally, the researcher must respect the privacy and anonymity of the participants (ibid: 7). These

guidelines provided an ethical foundation for the research and were therefore followed throughout the project.

The main ethical issues identified for the HL2 doctoral project involved informed consent and anonymity. There are issues in any research involving young children with obtaining informed consent, as they might not understand the need for or nature of such research. It is therefore important to acquire the consent of 'gatekeepers' who are responsible for the children (Cohen et al, 2011: 79). It is also important to make clear what the research involves to the children (ibid) and in the HL 2 project it was explained to the children exactly what they would be doing within the workshops at the start of each case study.

Consent was provided on behalf of the participants and school by the head teacher through a participant information sheet and consent form (see Appendix E). This also provided information about the research and guaranteed the anonymity of the participants and school. The form states that all the schools and participants will remain anonymous in any material shared or published in relation to the research and that participants are free to withdraw at any time.

One issue that arose in the second phase of the research was that of ownership and rights to compositions produced in the workshops, as some of these were placed on a web page. It was necessary to add an extra section to the consent form to establish formal agreement for this. The DMU Faculty of Arts, Design and Humanities Human Research Ethics Committee (and later the Faculty of Technology committee in Phase 2 given the move of the Music, Technology and Innovation Centre in a reorganisation) gave full ethical approval for the research.

### **3.4 Summary**

This chapter first briefly explained the ontological and epistemological perspectives on which the research is based and in doing so situated it in the interpretive research paradigm. It is concerned with investigating, using qualitative data, the subjective experience of the participants in relation to the

workshops and their resulting perspectives on composing sbm using heightened listening practice as a creative tool. The theories that underpin the methodology (grounded theory and complexity theory), which have guided the structure and direction of the research, have also been explained. The research used a multi-case study approach taking in a diverse selection of schools across the Midlands. The sampling in particular was led by grounded theory (incorporating open sampling, selective sampling and theoretical sampling) and resulted in a narrowing of focus over three stages. The first stage involved an open approach including all ages across KS2, while the second phase focused on Year 5 and 6 students. Phase 3 involved a small sample of Year 6 pupils, who had participated in phase 2. The purpose of this final phase was to collect more data on the theory of the heightened listening scale (see section 4.4), which was developed from the themes that emerged from the data in the first two phases.

The methodology consisted of a series of workshops in which the children learnt to use listening skills to support the creation of sound-based compositions. Data was primarily collected through questionnaires, observations, teacher feedback, student work and recordings. The observation sheets included prompts that were designed to take into account the complexity of each school context. Analysis and evaluation of this data were informed by complexity thinking but also used grounded theory coding approaches from which theories can be derived. The process of designing the research also involved addressing ethical issues and the project was granted approval by the Faculty Research Ethics Committee. Now the methodology and theoretical basis has been described, the next chapter will analyse and evaluate the results from the multiple case studies by examining each phase of the research in turn.

## **4 Findings and Data Analysis**

### **4.1 Introduction**

This chapter will present the results of the research and aims to give voice to the multiple perspectives of the different participant pupils. As described in chapter 3, the research method involved separate case studies in eight schools that each included a series of workshops where the children recorded and composed pieces after learning listening skills. Data was triangulated from a number of sources such as questionnaires, observations, pupils' work, teacher feedback and recordings. In this chapter a summary of significant and representative data will be analysed and evaluated across the three phases.

As explained in chapter 3, the HL2 methodology was influenced by a grounded theory approach to research. This meant that data was analysed and evaluated throughout the phases of the research through a process of coding from which categories and themes were allowed to emerge. The themes that arose from the open and exploratory approach of phase 1 led to a narrowing of focus in phase 2, and subsequently phase 3, as particular themes were more closely investigated. Across the three phases an enormous amount of data was collected especially in terms of the pupils' work, questionnaires and observations. It is not feasible to present all the data within this thesis, as it would be overwhelming for the reader, which is a common issue for qualitative researchers (whereas quantitative researchers can more easily present large volumes of data using tables and statistics) (Denscombe, 2014: 295). Therefore, what is presented is a summary of the data using significant examples in order to illustrate the emergent themes. This chapter will present these themes, explaining how they emerged by introducing each phase and case study in turn. Following this chapter 5 will examine in more depth how these themes are related and the conclusions that have been drawn from them.

## **4.2 Phase 1 – Key Stage 2**

As explained in chapter 3, in accordance with a grounded theory approach, phase 1 of the research used an open approach to sampling within certain age boundaries. These boundaries were based on the experience of the HL project, research into the ‘open eared hypothesis’ (Hargreaves, 1982) as well as the link between music and identity in adolescents (see North and Hargreaves, 1999; Hargreaves and Marshall, 2003). This suggested that Key Stage 2 children might be more open to forms of unconventional music than older children and that music would be less linked to identity at this age. Therefore in this first phase of the research a wide range of schools from a variety of socio-economic backgrounds were contacted; a rationale for this is provided in section 3.3.

### **4.2.1 Case study 1**

This case study represented the first opportunity to test the workshop design in a real educational context. As a result a number of changes were made to the workshops in the following case studies. However, these changes were the result of themes from case study 1 that continued to arise in other case studies. A number of categories emerged in this case study that guided the direction and focus of the research in the subsequent case studies, which will be discussed in the final part of section 4.2.1. Therefore, it contributed useful data and interesting work from the pupils, meaning it should not be treated as just a ‘pilot’ study, but the beginning of a process of the gradual refinement of categories as phase 1 progressed (which is consistent with grounded theory).

#### **Overview of case study – School A**

The school used in case study 1 (which will be referred to as School A) is according to the Ofsted report (2009) a community school serving a mainly Asian community in the East Midlands in which the number of children eligible for free meals is below average. The vast majority of pupils come from minority ethnic groups and many learn English as an additional language. The two most recent Ofsted reports



gave it a grade of 'good' and in 2009 there were fourteen languages spoken across the pupil population. Thirty-three Year 3 and 4 (7-9 year olds) children completed the workshops in case study 1, which took part during a timetabled music lesson.

### **Soundwalk and listening exercises**

As explained in chapter 3 (section 3.3.2) when describing the workshop structures, the first session began with listening training in the form of a minute's listening in the classroom followed by a soundwalk. The purpose of these exercises was to first raise the children's general aural awareness and then in the soundwalk focus their attention on particular qualities of sounds and their position in the soundscape (see soundwalk instruction sheet in Appendix C).

At this stage in the project it had been intended for the teacher to lead the workshops by using the provided teacher packs (see Appendix A). However, the teacher had not had time enough to be familiar with the material and it was decided that the researcher should lead the workshops with the teacher's support. The original intention was to run two soundwalks over the first two workshops, in which the children would also make recordings. It became clear that this was not the best approach for collecting useful recordings and for focusing the children's attention on listening practice, as the children were distracted by the use of the digital recorders. Additionally, the weather conditions made recording outside problematic, as there were strong winds.

### **Compositions and stories**

In total twenty compositions were completed (see the school A folder on the DVD) by the children (there were thirty-three children but some of them worked in pairs) by the end of the last workshop and fifteen of these also had stories to accompany them. The stories were encouraged as a means to help the children to structure their pieces but some of the pupils were unable to complete these in the time available. As it had not been possible for the children to record their own sounds of adequate quality due to the difficulties discussed above of using recorders encountered in the first sessions, the pupils were provided with a


selection of generic audio files from which they could choose five. These included sounds such as the sea, rain, fireworks, bubbles, sirens, fire and rock falls. However, in order that the children would have some sounds unique to their school to use in their compositions and taking advantage of the mix of languages spoken in the school, recordings were made in class of children saying 'listen' in different languages. This uniqueness was an important part of the creative process in each school in order to allow the children to use sounds that would have particular meaning or relevance to their lives.

Pupils mainly used looping, editing, reversing and time stretch to process the sounds. Progress in the workshops was hindered by a number of ICT issues, such as the software not being installed properly on the computers, which resulted in last-minute changes to the lesson plans. Nevertheless, some of the work completed was quite impressive when considering the age group and their lack of familiarity with the technology and sbm.

The accompanying DVD contains all of the pieces produced at school A, but two examples will be discussed in this section which are judged as interesting in their use of narrative or in their musical arrangement. Below in Figures 4.1 and 4.2 are examples of stories that were produced for the compositions (see SAcomp1, and SAcomp2 on the DVD). It was interesting that the children used images or graphics as well as words to describe their ideas that had been inspired by the sounds; they were not prompted to do this.

'The Ghost' (Figure 4.1) shows use of the imagination particularly in the first section (with use of reverse and time stretch) and connects to the written narrative using sounds that represent fireworks and sirens. The second section uses a time-stretched voice to represent the ghost, something that was common in many of the case studies. 'Music Story' in Figure 4.2 shows that developing a narrative was a useful device for some children for structuring their compositions, as this pupil has listed each sound with the associated part of the narrative. 'Fire on the Beach' (see SAcomp3 on DVD and school A narrative example in Appendix J) also has a clear narrative that relates to the corresponding audio, through the use

of sirens, waves and bubbles alongside the listening theme represented in the different languages.



I was walking across the street on diwali night. I could hear fireworks banging and I heard a police van pass by I wondered why?

I came past a house. I knocked on the door for a cup of tea, no one opened the door. As I was walking away I saw the police stop by the house I just went to bed. I heard some voices it was becoming louder as if it was coming closer to me...

**Figure 4-1 School A narrative example 1 (SAcomp1 on DVD)**

# Music Story

---

1. Bath fill :  
First somebody leaves the tap open. Then the bath tub fills so it leaks and the house gets flooded.
2. Bottle Pour:  
Next the silverware fall from the cupboard and they call the police and then they open the door. Then everything gets filled with water and there is water ever where so then now they go outside.
3. Rain on Umbrella:  
Thirdly they get out there Umbrellas and it starts raining heavily and the river dam's break and the river Thames overflows and that makes everyone run. Everyone starts screaming and they start racing away from the flood.
4. Many Sirens:  
Then everyone starts looking for emergency services and some people call the police but the others left call the ambulance, but only a few people called the fire brigade. Everything is at the state of a time of a messy mess.
5. Listen:  
Now everyone starts saying listen but in their own but nobody understands it or are listening to them. They will not listen because they are too busy waiting, looking or doing other things for the ambulances, fire engines or the police officers to come and visit and come to help them.

**Figure 4-2 School A narrative example 2 (SAcomp2 on DVD)**

Many of the compositions include fires and sirens or have used time stretching in order to create a 'ghostly' or 'spooky' atmosphere. The use of such horror narratives became a recurring theme across the case studies. Additionally, it was evident from listening to the compositions that many of the children had initial ideas that were not further developed. This was possibly due to lack of time or guidance. Due to the number of ICT issues that arose it was difficult for the researcher to provide enough help for all the pupils in a large class. This was in some respects a reflection of the participants' age, as they required greater support than older children in subsequent case studies who were more ICT literate. Also the original teacher was unable to be present in all the workshops, which meant that support was provided by different teachers and assistants who were unfamiliar with Audacity and therefore not able to offer advice on this to the pupils.

### **Responses to questionnaire**

Thirty-three Year 3 and 4 (7-9 year olds) students completed the workshops and below is an analysis of their responses to the questionnaire in the final workshop.

#### **Q1 What did you like about doing these workshops?**

This question was an open-ended question that allowed the children to describe in their own words which aspects of the workshops they enjoyed. All the children responded and the common themes are shown in the table below.

**Table 4-1 School A - most common themes in response to Q1**

<b>Response</b>	<b>Number of mentions</b>
Listening	11
Making sounds	10
Creating sound stories / compositions	9
Fun	5
Using Audacity	5

Listening was mentioned most out of all of the themes, despite the issues that arose during the soundwalks in the first sessions. Making sounds or compositions are both creative activities, which means that answers relating to creativity were the most common when combined. Some of the children mentioned more than one theme in their answer.

### **Q2 What did you not like?**

Twenty-nine of the children answered this question and the table below shows the most common themes found in the responses.

**Table 4-2 School A most common themes in response to Q2**

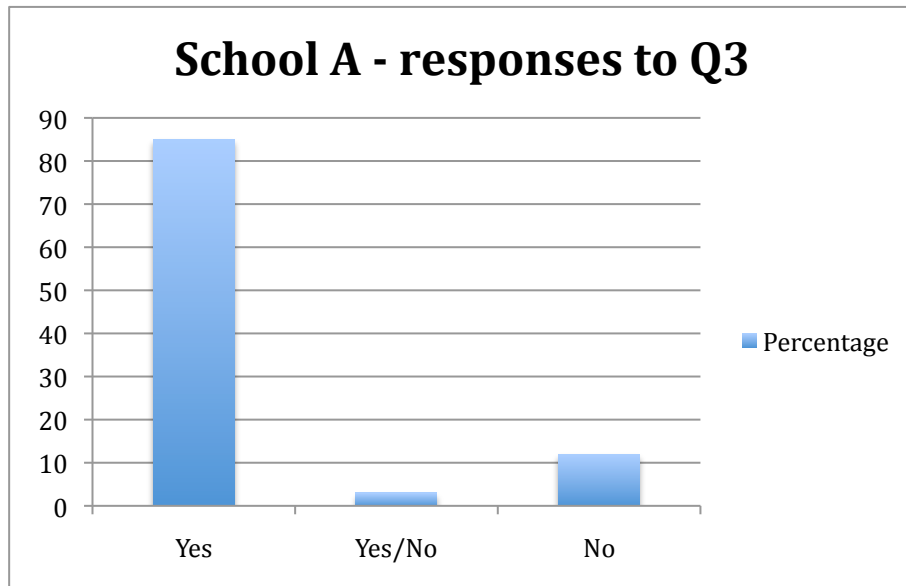
<b>Response</b>	<b>Number</b>
Nothing / liked everything	7
Too complicated	4
Soundwalks	4
Left blank	4

The most common response to this was that they liked everything and this happened in most of the case studies. Some responses reflected the difficulty that the children had in using the technology. This was a theme in negative responses throughout the case studies but was particularly significant in school A, which illustrates how their age influenced the results.

### **Q3 Would you like to make a sound composition again in the future?**

**Table 4-3 School A - responses to Q3**

<b>Yes</b>	28
<b>Undecided</b>	1
<b>No</b>	4



**Figure 4-3 Graph showing school A responses to Q3 by percentage**

As shown in Figure 4.3, a strong majority (85%) answered positively on whether they would like to make sound compositions again, below is a selection of the explanations for positive responses to Q3.

**Table 4-4 School A - sample positive responses to Q3**

SA1	<i>Because sound composition is very fun and exciting. I am now into music more.</i>
SA2	<i>Yes because it is fun and I like listening to sounds</i>
SA3	<i>Yes because it is very interesting to compose your own sound</i>
SA4	<i>Because then I can listen to music and make my own kind of music</i>
SA5	<i>Because I could gather up all the sounds and make a new one</i>

**Table 4-5 School A - themes in positive responses to Q3**

Theme	Number of times mentioned
Fun	15
Listening	6
Creating a sound story/composition/music	6
Using effects or making/ changing sounds	5

The most common theme in these answers was that they found the experience fun or interesting. Additionally, in a number of the answers there seemed to be a connection between it being fun (the most common theme) and creative activities such as making sounds or compositions (or creativity) as shown in responses 1 and 3 in Table 4.4 above.

**Table 4-6 School A sample negative responses to Q3**

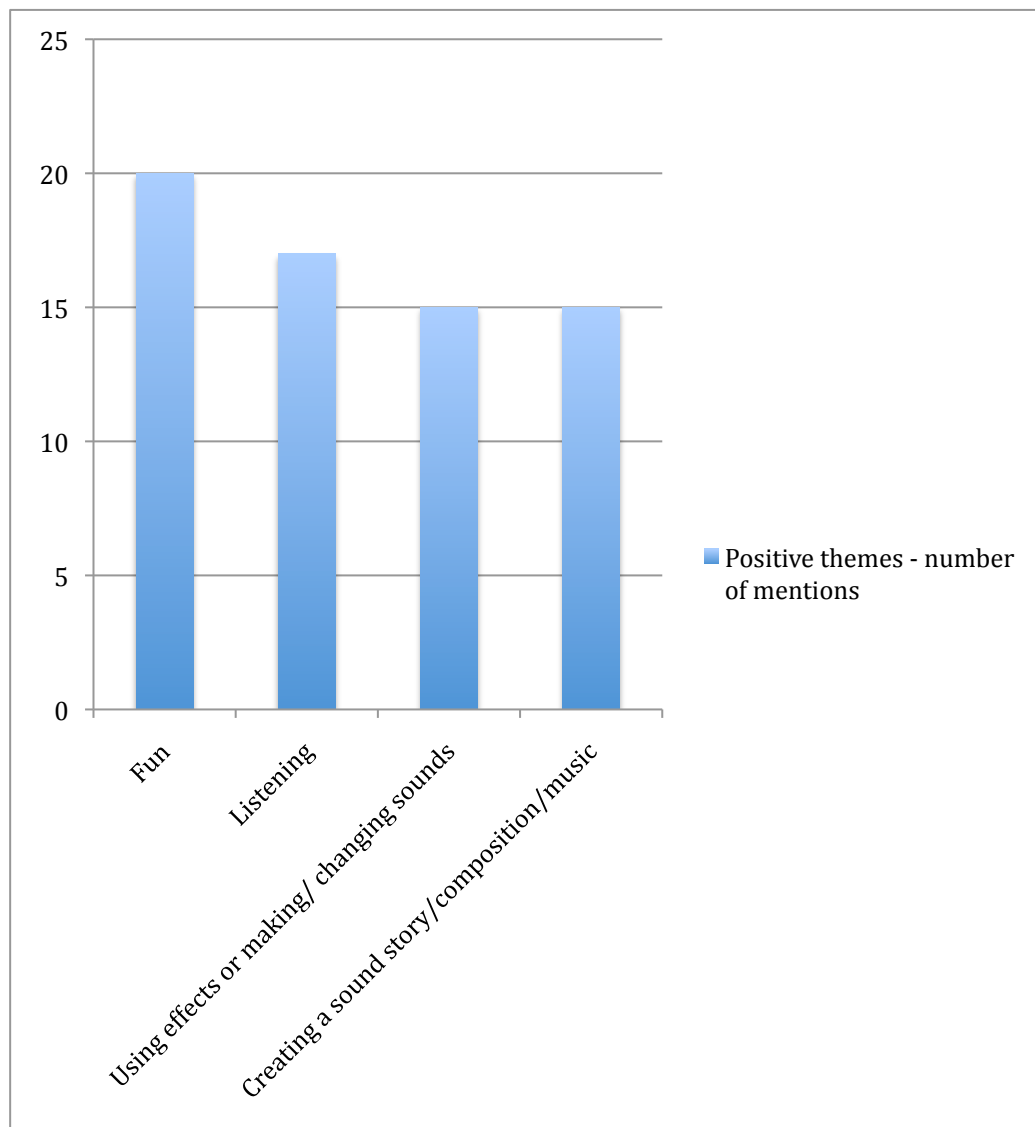
SA6	<i>Because I don't want to be a musician I want to be an optician</i>
SA7	<i>I did not like Audacity</i>

There were very few negative responses to this question but it is interesting to note that SA7 above relates to the issues children had with the software rather than composing sbm.

### **Themes from positive responses overall**

Below are the themes that emerged in positive responses to Q1 and Q3. As above, 'fun' was the most common theme. However, the themes most clearly connected to creativity are mentioned thirty times in total if combined, so it could be proposed that this was the most significant factor overall in the children's high levels of engagement. It is also interesting to note that listening was mentioned a significant number of times, although the connection between listening practice and creativity was not clearly made.





**Figure 4-4 School A - graph of common themes in positive responses overall**

### **Teacher feedback**

The teacher recommended in his end of year report as music coordinator at the school, that the children should continue to use Audacity /ICT in their music lessons, as he was not continuing in this role the following year. The written feedback provided by the teacher at the end of the case study is shown in full in Appendix I. The teacher felt that the workshops had been engaging for the children but recognised the difficulties they had with the technology and that the size of the class had created some issues.

The comment below reflects the teacher's preferred method for teaching ICT.

*The instructions of course should be explained as one step at a time; ensuring that no one is lost on the way.*

However, following this approach also means running the risk of more able children becoming bored waiting for others to catch up. A positive relationship was evident across the research between allowing children freedom to experiment and making progress with the work, which is commensurate with a constructivist approach as discussed in section 2.2.

### **Overall conclusions and key themes**

A number of themes emerged from the data collected in this case study that influenced the structure of the workshops and focus of the investigation in the subsequent case studies. Such an iterative process is part of a grounded theory approach to collecting data. These themes are outlined below as well as the resulting actions for the following case study.

#### ***Difficulties***

- Progress in the workshops was significantly hindered by ICT issues such as problems with the installation of the software.
- The large class size made it difficult to provide enough support for all the children. However, other factors also influenced this such as lessons being limited to forty-five minutes.
- Taking the recording devices on the soundwalk made it difficult for the children to focus on listening and recording.

- The teacher was not present in each session, which meant it was difficult for any of the other teaching assistants to develop sufficient knowledge of Audacity in the time they had.
- Due to their young age many of the children struggled with the technology and although they produced some good work they were hindered from progressing further in the time allowed due to their limited ICT experience.

### ***Successes***

- Overall, there was a very positive response to the workshops from the children. It was clear that the premise that young age groups can engage with creating sbm was supported.
- Listening and creativity were strong themes in the positive responses.
- Some of the compositional work showed promise with ideas that could have been developed further given more time and guidance.

### **Overall themes**

- ***Age*** – There was high engagement but many in the group appeared to find the technology challenging.
- ***Unique Local Characteristics*** - This case study demonstrated the importance of unique local characteristics and that the workshops needed to be flexible enough to adapt to these. This was demonstrated in relation to culture via the recordings of the children saying 'listen' in different languages, ICT issues, time constraints and the contribution of the teacher. This theme illustrates the significance of contextual complexity (as discussed in chapter 3) in influencing results. The results in this case study were affected by a number of complex, intertwining and variable factors, which is consistent with complexity theory as described in section 3.2.1.

- ***Creative freedom*** - The children seemed to make more progress and more engaged when they had the freedom to experiment with the software on their own. This might have been because it allowed them to become intrinsically motivated (see Deci and Ryan, 1985), as autonomy is an important factor in supporting this (as explained in section 2.2.3).

### **Actions for following case studies**

- To change the lesson plans to focus on listening training in the first workshop and recording in the second workshop, which would give the first two workshops a clearer focus.
- The difficulties the children had with the technology suggested that it would be interesting to investigate if an older group in Key Stage 2 could make more progress.
- It seemed apparent that most of the ideas for narratives were formed after hearing the sounds and how the effects changed them. This suggested that narratives needed to be developed alongside sonic experimentation and composition rather than as the foundation for them.
- It was clear that where possible technical issues needed to be resolved before the start of each case study.
- It was evident from school A that the teacher might not be comfortable leading the workshops and so if necessary the researcher would have to be prepared to lead with the teacher's support. The researcher would still be a participant observer (as discussed in section 3.3.3) but now with more emphasis on the teaching. Unfortunately, this was unavoidable in many case studies as the teachers did not have the time to learn the material and software to a degree where they would be comfortable leading the sessions.

## 4.2.2 Case study 2

### Overview of the case study – School B

The grounded theory approach of the project meant that themes that emerged in each school were further investigated in subsequent case studies. As a result the research involved an iterative process in which changes were made to the workshops based on data gathered in previous case studies. However, the general activities of listening training, recording and compositional work remained the same but were subject to various small enhancements. The actions (outlined above) identified as a result of case study 1 were thus implemented in case study 2. As a result of the findings from school A, case study 2 involved a smaller group of twenty-one Year 5 (9-10 year olds) children to investigate how this influenced progress made with the technology. Other significant enhancements included:

- The soundwalk and recording activities were separated between workshop 1 and 2.
- A clearer agreement on the roles of the teacher and researcher was made. It was decided that the researcher would lead the workshops with the teacher's help and support. The teacher was encouraged to contribute as much as possible, based on their experience and knowledge of the class, when they felt it was appropriate.

School B is a community school in the East Midlands and, as reported in the 2010 Ofsted report (in which it is graded 'good'), the majority of pupils are of White British heritage with a small minority from other ethnic backgrounds. The percentage of pupils requiring free school meals is lower than typically found. The school appeared to have a happy and friendly atmosphere, which was an observation made by the researcher and supported in the Ofsted report.

### **Listening and written exercises**

As was decided after case study 1 the first workshop focused primarily on listening training. The soundwalk was led by the teacher and because the children focused on listening without the digital recorders it was more successful than in school A. They were then asked to choose some sounds and think about what they reminded them of as part of a short written exercise. The class happily came up with some examples for this, as shown in Table 4.7 below.

**Table 4-7 School B - written examples**

1	<i>The sound of the pebbles reminds me of my dad because he has pebbles in his garden.</i>
2	<i>Wind makes me think of being on holiday by the sea on a windy day with waves crashing.</i>

It is interesting how these examples link so clearly with memories and highlights how the evocative nature of sounds is also experienced by this age group. This type of listening is moving from a referential type of listening to something more reflective and imaginative as described by the terms discussed in section 2.4.

### **Compositions and stories**

In the second workshop the class recorded sounds in the classroom and outside in small groups of threes. The choice of sounds they recorded was decided partly in reference to the listening exercises that they participated in during the first workshop. Therefore, this was presented as an extension of the listening practice and it was explained that they were collecting sounds for them to use in compositions they would be making in the following workshops. They were excited to use the recorders and keen to record their voices, which was something observed in each case study. A large amount of audio was recorded in this workshop, which was later edited by the researcher and played to the class the following week.

Once the pupils started to use Audacity and experiment with adding effects to the sounds they had recorded, ideas for narratives began to develop. These were written in parallel to work on the compositions, and it seemed that in at least some of the work they influenced the development of each other. There were twenty-one completed compositions (these are all included on the DVD in the school B folder) and most had an accompanying narrative. The horror theme dominated the narratives and narrative example 1 (see Figure 4.5) below shows clearly the associations with cinema that played a role in creating some of their stories. However, it is clear that in general more detail has been included in these stories (see some other narrative examples for school B in Appendix J) than in the ones for school A, which could be a reflection of their older age or other contextual factors such as the school culture. Two typical examples of the compositions are discussed below.

Figure 4.5 or 'Addams family house' corresponds to SBcomp1 on the DVD and there is a clear connection between the narrative and the composition. The sound of walking on pebbles and leaves has been processed using delay and time-stretched laughter, voice and footsteps have been used to represent the threat from the house. These were also edited and sequenced within Audacity in relation to the narrative. This is similar to the use of time-stretched voice in school A as representing something 'spooky' in the narratives produced there.

Similarly, SBcomp2 on the DVD (called 'There's something in the house', see school B narrative example 1 in Appendix J) also uses a horror theme related to ghosts that has been evoked through use of time stretch. Again there is a connection between the sounds and the narrative, which references the wind and creaking doors as well as a ghostly presence. This time the stretched sounds of voice, traffic and rattles have been layered along with the sound of edited footsteps and ends with the closing of a door. It appears to have been sequenced to some degree to match the narrative.

The horror theme appeared to spread around the class during the workshops as the pupils shared ideas. While many of the stories related to the compositions, a

few of the children struggled to turn their narratives into sound compositions that were obviously related. However, in general the group was more ICT literate than at school A and the compositions involved more careful arrangements of the sounds as well as a more advanced use of editing and processing (for example, SBcomp2, 3 and 4).



☹ **Addams family house** ☹

**Once upon a time three school girls called Ella, Millie and Emily walked across stones and pebbles in a forest. The forest they were in was really old there were dead leaves all over the place they thought it needed a good clean up. It was muddy and their clothes were getting muddy.**

**They came to a halt. There in front of them there was a huge palace. The Addams family lived there. They had 2 children WHOS NAMES NO ONE KNEW the mother called Morticia the father's name no one knew and the old patents no one knew. They tried to run back to Ella's house but couldn't because a hand came out of a postbox. Then a laugh came out the house and Morticia came out and told us to run before the children chased us...**

**Emily woke up it was all a dream. She looked at her clock and it said 7.30. She got up quickly and rushed to school. Emily met her friends and told them about her dream. The next few nights she had nightmares about the dream!!!!**



Figure 4-5 School B narrative example (SBcomp1 on DVD)

## Responses to questionnaire

Twenty-one Year 5 students completed the workshop questionnaires and below is an analysis of their responses.

### Q1 What did you like about doing these workshops?

All the children responded to this question. As can be seen below the same themes arose in the majority of responses as emerged at school A for this question, however listening changed from being the most common theme in school A to the least common with only two references in school B. The creative activities of making sound stories and creating or manipulating sounds were the most prominent themes, as they were when combined at school A.

**Table 4-8 School B - common themes in response to Q1**

<b>Response</b>	<b>Number of mentions</b>
Making sounds	9
Creating sound stories / compositions	7
Fun	3
Listening	2

Comment SB1 below demonstrates the connection between time stretch and associations with horror that were evident for many children.

<i>SB1</i>	<i>Making the sounds longer and making them sound very very scary</i>
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## Q2 What did you not like?

All the children responded to this question.

**Table 4-9 School B - common themes in response to Q2**

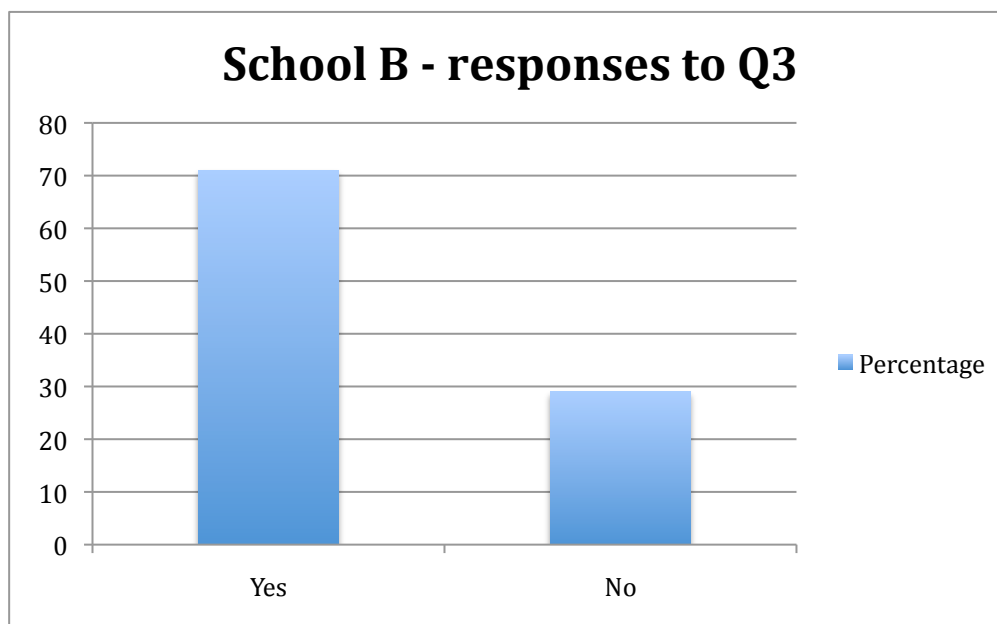
<b>Response</b>	<b>Number</b>
Problems using computers	7
Nothing / liked everything	4
Soundwalk	4

The most common theme for this question related to issues connected to the use of the computers, such as freezing during playback or deleting work by mistake. The soundwalk and 'liked everything' were also themes at school A. One of the pupils that included soundwalk had given the answer 'everything' in Q1, which contradicts the answer for Q2. The teacher encouraged them to give a response to this question when some children said they could not think of anything and, as a result, it might be that some pupils put the activity they enjoyed least.

## Q3 Would you like to make a sound composition again in the future?

**Table 4-10 School B - response to Q3**

<b>Yes</b>	15
<b>No</b>	6



**Figure 4-6 School B graph of responses to Q3**

As shown above, the majority (over 70%) answered positively to whether they would like to make sound compositions again.

**Table 4-11 School B - themes in positive response to Q3**

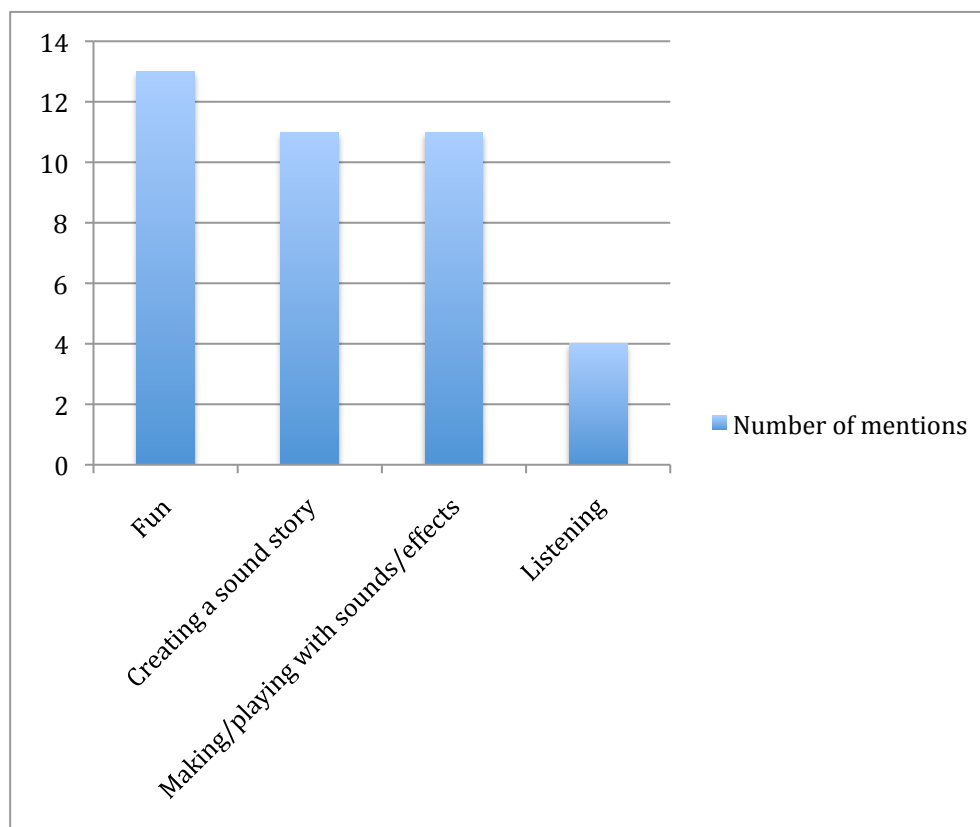
Theme	Number of times mentioned
Fun	10
Creating a sound story/composition	4
Using effects or making/ changing sounds	2
Listening	2
Learn something new	2

As with School A 'fun' was the most common theme for this question, with nearly 50% of the class mentioning this, which was a similar proportion to school A. The creative aspects of composition were also common themes again, but not quite as strong as in Q1. However, listening was a less prominent theme than at school A. Two of the responses related to experiencing or learning something new as shown in comment SB5 below. The theme of novelty emerged as a significant explanation for engagement in the project and is discussed in detail in chapter 5.

**Table 4-12 - School B sample responses to Q3**

<i>SB2</i>	<i>Because it's fun making sound stories and I really liked learning how to use audacity to make sound stories</i>
<i>SB3</i>	<i>I want to make another one because I can get credit for what amazing things I've done.</i>
<i>SB4</i>	<i>Because it was great fun and I like listening to sounds!</i>
<i>SB5</i>	<i>Because you get to make all different sounds on the computer and learn all different sounds that you don't know what is around you.</i>
<i>SB6</i>	<i>Because its fun to experience new things and also its really fun</i>

Out of the six who answered negatively, three of them related to it being difficult or complicated, while two of them said it was 'boring'. Being complicated or difficult suggests that the children might still enjoy composing sbm if they felt more confident or able to work with the technology involved. This is supported by the fact that four of the six pupils who answered negatively to Q3 had suggested difficulties with the computer was what they disliked the most in answer to Q2. It might be that using software for composing sbm designed especially for a younger age group might help to resolve this issue.



**Figure 4-7 School B - most common themes in positive responses overall (Q1 and Q3)**

The same themes emerged from this case study as had in case study 1, although the theme of listening was less common. The theme of creativity was again very significant in explaining engagement.

### **Teacher feedback**

The teacher was present at all the workshops in this case study and provided the written feedback (the full feedback is shown in Appendix I). The teacher felt that the workshops were an engaging experience for the children:

*The children and I all thoroughly enjoyed working through these sessions from listening carefully to the sounds around us and learning how to use new software in the ICT suite.*

As can be seen in the following excerpt the teacher valued the listening practice and believed it had a beneficial effect in other classroom situations.

*I do think that the sessions have made the children much more aware of the sounds all around them and how they can pin point sounds if they focus. Additionally, I am able to refer to their listening skills more in classroom situations as they are able to think back to their work with you.*

Also, as shown in the excerpt below, the benefit of the creative writing is mentioned as this was something that they did not have many other opportunities to do in other lessons, which mirrors concerns raised in section 2.2.3 about opportunities for creativity in the current curriculum.

*The sound stories to accompany the sounds also worked well as the children could be more creative in their writing than in usual lessons at school.*

This links to the major role of creativity in engaging the children in the project, which is one of the research's original contributions as outlined in chapter 5. Additionally, the value of allowing the pupils to experiment with the sounds is highlighted, which was a theme that had emerged from case study 1 and supports the value of play in constructivist learning as outlined in section 2.2.3.

*By giving them time to 'play' with the sounds and the software, it enabled them to become more confident in what they were doing and decide which effects and sounds they liked best.*

The recommendation of the teacher given in the excerpt below was used in subsequent workshops as part of a sound box exercise.

*It would have been useful to make a table for the children to fill in with the different sounds recorded so children could tick which ones they liked and didn't like (similar to the sounds in class but more official for their sound stories) and this would then have helped them to make more informed decisions about their sound stories.*

## **Overall conclusions and key themes**

This case study ran more smoothly than case study 1 suggesting that the alterations to the methodology had worked well, although other factors such as the contribution of the teacher and good ICT support were also significant. The main themes are outlined below.

### ***Successes***

- Overall, the results from case study 2 were very positive, with the teacher as well as the Head stating in conversation with the researcher that they were keen to do similar work in the future and provide recommendations to other schools.
- A compilation of the pieces was played in a special 'achievements assembly' in which the children were given certificates for completing the workshops as well as receiving positive feedback from the school.
- The teacher was very supportive and was present at each workshop and so able to learn the software quite quickly.

### ***Difficulties***

- It was still apparent that one of the main obstacles to developing the pieces further was the amount of time available for working on them. This was also implied by the teacher, when suggesting that the soundwalk and recording be combined to make more time for working in the ICT suite.
- The link between the listening practice and compositional work was not clearly reflected in the data collected from the children.

### **Overall themes**

- ***Age*** - as mentioned by the teacher, the children learnt to use Audacity quite quickly and appeared more ICT literate than the younger class in case study 1. The overall standard in the compositional work was generally more



accomplished as a result. However, although the majority (71%) of responses were positive to Q3, the proportion was not as high as with the younger age group in case study 1 (85%).

- ***Horror narratives*** - most of the stories were concerned with horror and some had a clear cinematic link, which is similar to the experience at school A. This influenced the associations they made with sounds; for example, for one composition the sound of a zip on a pencil case was interpreted as a gun or explosion.
- ***Recurrent themes in positive responses***- the same themes emerged in positive responses as had in case study 1 with the role of creativity in engagement being the most prominent. This supports Csikszentmihalyi's (1996) view of creative activity as something that is characterised by a sense of enjoyment and fulfilment (see section 2.2.3). Despite fewer mentions of listening, the teacher believed their general awareness of sound had noticeably increased as a result of the workshops.

### **Actions for following case studies**

- It was decided to include a question on listening in the questionnaire in order to collect more data on the participants' view of the listening practice.
- Although the compositional work showed promise, it was still evident that given more time they could have been developed further. Additionally, despite the class size being smaller than at school A, it was still difficult to have enough time working with the children individually on their compositions. It seemed evident that it would be beneficial to work with smaller groups and get extra time if possible in future schools.
- To investigate the possibility of an extra workshop in the following case studies.

### **4.2.3 Case Study 3**

#### **Overview of the case study – School C**

Case study 3 was conducted in a large primary school in the East Midlands with a wide range of ethnicities; the majority of children are from an Asian background. According to the 2012 Ofsted report (in which it achieved a rating of 'good') the number of children requiring pupil premium funding is average and 90% of the children speak English as an additional language.

Leading on from the experience of the first two case studies where class size had been a factor in the progress children made with their compositions, this case study involved nine Year 4 children (8-9 year olds) who were selected by the class teacher. This selection was based on which children the teacher thought might engage well with this type of creative activity. However, this meant the teacher needed to supervise the rest of the class and as a result the workshops were run with the support of different teaching assistants. Additionally, this was a younger group than in case study 2, where it was thought that age had influenced the progress the children made in learning the software compared with case study 1. Nevertheless, this was an opportunity to investigate how a Year 4 group would respond to learning the software when provided with concentrated support due to the small group size.

The intention was also to collect data relating to the children's perspective on the listening practice and how this aided their compositional work, so a new question was added to the questionnaires at this stage for this purpose.

#### **Written exercise**

In the second workshop before recording, they were asked to engage in a brief written exercise where they were asked to think about what the sounds reminded them of. Below are some examples of their responses. There is evidence of good use of the imagination.

**Table 4-13 School C - written examples**

1	<i>The wind reminding me like I am in the air</i>
2	<i>Leaves remind me of paper tearing</i>
3	<i>Children screaming – when your on a funfair ride</i>

Although it was necessary to provide them with a number of examples, once they understood the exercise they were clearly able to make imaginative associations with the sounds they had heard on the walk. There was evidence of engagement in reflective listening, such as shown in first example given above.

### **Recording**

As this was a small group the pupils were able to work in pairs to record sounds. They were very enthusiastic about using the recorders and were split into two groups recording sounds indoors and outside. These children needed more assistance to use the technology than at school B, but this was possibly a reflection of their younger age. A variety of sounds were recorded that were later edited into a selection for use in their compositions.

### **Compositions and Sound stories**

The form of the narratives produced at school C was different to the previous schools. This was due to the sound box exercise, which was introduced following the suggestion made by the teacher in case study 2 in order to help them choose which sounds they wanted to use for their compositions. The sound box exercise involved them listening through the available sounds and marking on a table (see Appendix H) whether they liked or disliked those sounds.

As in school A, the word listen was recorded in different languages reflecting the diversity of the school. There were also some sounds made from musical instruments as the lessons took place in a small music room. The compositions were made on the school laptops, which unfortunately ran quite slowly at times.

The children were slower at learning Audacity than in school B, but this might be expected due to their younger age.

All nine compositions are included in the school C folder on the DVD and six of these have an accompanying narrative or theme although none of them have titles. As can be seen in the narrative examples given below, many of the children presented their ideas by listing the chosen sound in sequence and then writing next to it what it could represent in their story. Examples 2 and 3 were written in reference to dreams, so do not follow a clear linear narrative and relate more to feelings. The narrative examples are quite short as it took the children a significant portion of the workshop to listen through to the sounds and make decisions. This was done in writing to save time and below are some examples of their work:

**School C narrative example 1 (SCcomp1 on the DVD):**

*In the car a tornado happens and I try to escape, everyone says listen. I go in my car and I escape and I closed the car door and went home and then a hurricane happens.*

*Sounds - Soundwalk traffic, Door close, Listen, Piano string ring, Car engine*

**School C narrative example 2 (SCcomp2 on the DVD):**

- 1. The door closing reminds me of when someone's about to smash some thing on you – (in a dream).*
- 2. Rolling pencil – A flash back*
- 3. Footsteps – coming to get you!*
- 4. Leaves – Hurricane*
- 5. Pencil writing – flash back in school when you're writing. Something's going to happen.*
- 6. Drums – Bigger footsteps.*

**School C narrative example 3 (SCcomp3 on the DVD):**

*It's a scary story about a person who is trapped in a nightmare and goes through all the disasters she's had in her life.*

*The children playing music (reminds me of the time I sang and everyone laughed).*

*Door closes (they close the door. It was awful).*

*The footsteps – teacher (reminds me of when I didn't do enough work)*

The compositions are also different from the first two case studies largely because they did not use time stretch. This effect was not introduced to them so as to investigate if this influenced the themes of the compositions, which had been dominated by 'horror' in the previous case studies. Again this change was consistent with a grounded theory approach and was made to gather more data on the relationship between time stretch and the horror theme. The pieces were also generally shorter than some the previous case studies, as they had to make the compositions out of audio edits that had not been stretched. It is interesting that the connection with horror is not quite as strong as in the previous schools, which indicates that time stretch played a significant role in this association. Three of the narratives make reference to hurricanes (see examples 1 and 2 above), which suggests the children influenced each other's ideas.

In examples 1 (SCcomp1 on DVD) and 2 (SCcomp2) there is a relationship between their sound story plan and the finished composition. Both these pieces show promise and creativity, for example by making rhythms in example 2 and layering and use of delay in example 1. Example 3 (SCcomp3) also shows promise but it does not relate to the story as clearly, although the three sounds mentioned in the writing are included in the piece alongside other sounds. The theme of this narrative is quite a challenging one to easily represent in music. These were the three most developed pieces and in general it was clear that some of the children had struggled to finish their pieces in Audacity, as is shown by examples SCcomp4 and 5 on the DVD.

## Responses to questionnaire

Eight children were present on the final week to complete the questionnaires. The answers were very positive but there is a lack of detail given in their explanations. This might in part be a reflection of their age but also that their attention spans appeared to be shorter in this final workshop, which could have been because this was the last week before the Christmas holidays. Below is an overview of the responses:

### Q1 What did you like about doing these workshops?

All of the children answered this question, but one response is difficult to read. The table below shows the themes that were present.

Table 4-14 School C - common themes in responses to Q1

Response theme	Number of mentions
Discovering/awareness of sounds	2
Creating sound stories / compositions	2
Making sounds	1
Fun	1
Using microphones	1

Although the word listening was not mentioned directly the theme of sonic awareness arose in two responses. As with the first two case studies creative activities and 'fun' were all mentioned, but using the recorders was also given as an answer for the first time, which partly reflects how well this group engaged with the recording activity.

### Q2 What did you not like?

Two of the pupils did not answer this, while one put a line through it and the five others either put 'nothing' or 'I liked everything', as shown in Table 4.15.

**Table 4-15 School C - common themes in response to Q2**

<b>Response</b>	<b>Number</b>
Nothing / liked everything	5
No answer given	3

'I liked everything' was a theme for this question in both the previous case studies.

### **Q3 Do you think the listening practice helped you to create your sound stories?**

This was the first time that this question was included. The responses are shown in table 4.16 below.

**Table 4-16 School C - responses to Q3**

<b>Yes</b>	7
<b>No</b>	0
<b>Undecided</b>	1

The quantitative part of this question supported the effectiveness of the listening practice. However, as shown below, some of the answers did not clearly explain why they thought the listening helped.

**Table 4-17 School C - sample responses to Q3**

<i>SC1</i>	<i>Yes because it made me listen</i>
<i>SC2</i>	<i>Because I enjoy making my own sound stories.</i>
<i>SC3</i>	<i>Yes because all the different sounds helped you to create your sound story and if you hadn't listened you don't know what they sound like.</i>
<i>SC4</i>	<i>Because it made me to calm down</i>

Comment SC3 most clearly explains how the listening helped in creating the sound stories. Comment SC4 is interesting as this was made by one of the pupils who had been having difficulties concentrating in other lessons. The HL2 doctoral project

was interested in the wider benefits of listening practice on the pupil's general behaviour and this response suggests that it had an effect on this participant that went beyond a heightened sonic awareness.

#### **Q4 Would you like to make a sound composition again in the future?**

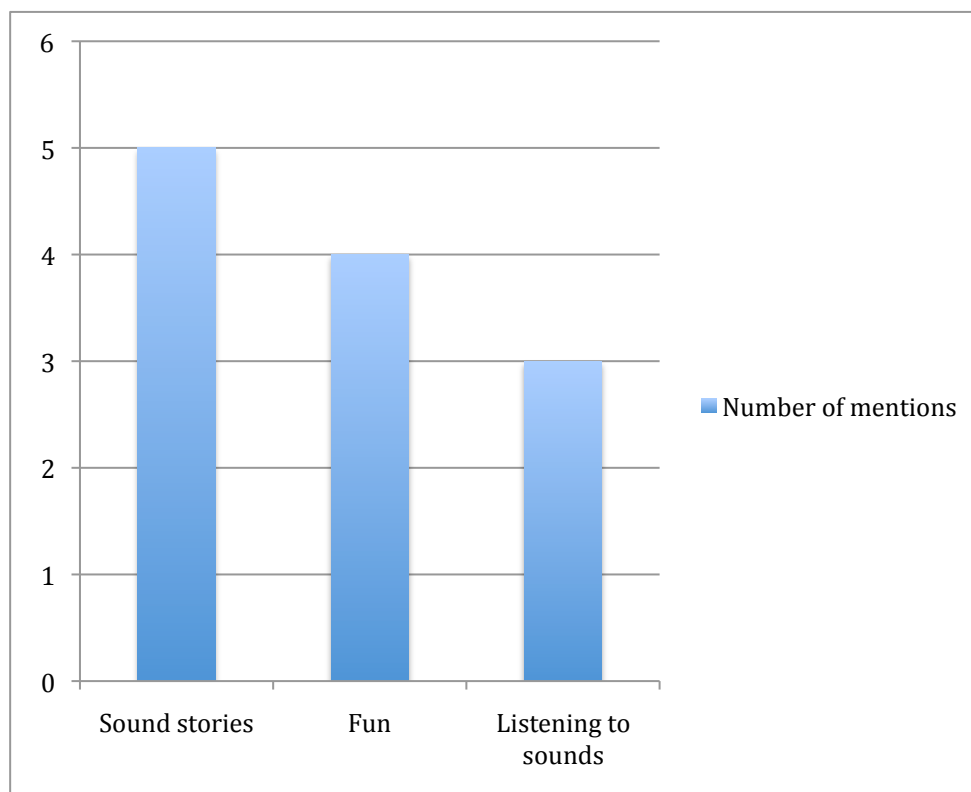
All the children answered 'Yes' to this, below are some of the explanations given.

**Table 4-18 School C - sample responses to Q4**

<i>SC5</i>	<i>Because it's fun and exciting</i>
<i>SC6</i>	<i>Yes because it was so much fun (making it). So I do this again.</i>
<i>SC7</i>	<i>Because I would like to learn how to make my own pieces of music</i>
<i>SC8</i>	<i>Yes because sound stories is part of every day life.</i>

Similar themes arose as in the previous case studies such as it being fun and engagement with creativity. Comment SC8 above is interesting as it suggests that making the compositions had a relevance to this pupil's life. A criticism that has been made of traditional music education is that in focusing on an aesthetic appreciation of music that emphasises western classical music, it is not always relevant to many young people's lives (see Regelski, 2002; Elliot, 1995).





**Figure 4-8 School C common themes in positive responses overall (Q1 and Q4)**

The above themes were all common in the previous case studies. As is shown in Figure 4.8, the creative activity of making a sound story was the most common theme, which mirrors results from the other case studies. Listening was mentioned three times in positive responses to Q1 and Q4 but extra data was collected in relation to this from the responses to Q3.

### **Teacher feedback**

It was not possible to get feedback on the workshops themselves as the teacher who arranged the workshops was not present for the sessions and three different teaching assistants, who changed from week to week, supported the workshops. However, some of the work was played in a school assembly and the class teacher (who had previously used Audacity) said in conversation that she wanted to continue to work with children in creating sbm in the future. Additionally, the assistants and teacher commented on a number of different occasions about how engaged the children had been with the workshops. For example, the teacher

explained that this was demonstrated by the participants not complaining when one workshop clashed with Friday afternoons' 'Golden time', which was one of their favourite parts of the timetable as they had the opportunity to play games and make art.

### **Overall conclusions and key themes**

Some of the key categories that emerged from the data in this case study were similar to the themes that had been identified in the previous case studies. The key themes that emerged in school C are explained below.

#### ***Successes***

- Overall, the data strongly suggests that the children enjoyed the experience and felt the listening training helped them to open their ears. In terms of engagement, this case study along with case study 1 indicate that Year 3 and 4 groups can engage with listening practice and creating their own sbm.
- The pupils' compositional work showed some potential and invention.

#### ***Difficulties***

- As with the other schools the children required more time to improve their pieces further.
- Some children missed important weeks and there was a lack of continuity in the teaching support, which had a disruptive effect.
- There were some significant issues with control and behaviour in the last session as the children became quite excited.

#### **Overall themes**

- ***Age and group size*** - even though the group was smaller than in the previous two case studies, much time was spent assisting the pupils with problems they had with the computers and software rather than working with them on their

compositions. As with case study 1 this could be a reflection of their age. However, this is also related to a lack of informed and regular teaching support, which leads onto the following theme.

- ***Continuity of teaching support*** - the experience at school C also supports the data from the first two case studies that having one teacher throughout the sessions can have a significant influence on behavioural issues.
- ***Horror theme less common*** - the compositions did not use time stretch, which resulted in shorter pieces where the connection with horror was not as strong as in the previous schools.
- ***Recurrent themes*** - creativity, fun and listening again emerged as key themes in explanations for positive engagement.

#### **Actions for following case studies**

- To extend the number of workshops to seven so as to allow extra time for composition.
- To gather more data with older age groups. The experience of these first three case studies suggested that older age groups from Key Stage 2 (Year 5 and 6) might be more able to learn the software in the time available than the younger groups.

#### **4.2.4 Case Study 4**

##### **Overview of the case study – School D**

School D is a smaller than average school in an area of the East Midlands where according to the Ofsted report (2009) most of the housing is owned by the local authority. Four out of ten pupils are from minority ethnic groups and the proportion of pupils entitled to free school meals is above average. It was awarded

the grade of Satisfactory in the last full Ofsted report (2009), but there were serious weaknesses noted in an inspection in 2012 (some of the recommendations made were connected to extending opportunities for improving writing skills and improving behaviour management) on which progress has subsequently been made according to an inspection made in 2013.

As explained in the actions from the previous case study this case study was extended to include seven workshops and involved an older (Year 5) group. In total twenty children completed the workshops.

### **Written exercise and recording**

There were some behavioural problems with this group but the children still managed to focus for some of the listening exercises and record sounds. In the second workshop they were asked to write down two sounds they had heard in the last week that they felt were interesting and what these sounds reminded them of, which many of them found quite challenging. However, some of them provided answers that demonstrated associations with memories, as shown in the table 4.19 below.

**Table 4-19 School D written examples**

1	<i>Wind blowing loud reminds me of being on the plane</i>
2	<i>Birds tweeting – this sound reminds me of nature and makes me feel like relaxing</i>

Recordings were made by small groups in the classroom and outside. As with previous case studies the sounds were edited before the next workshop and the children were asked to review the sounds as part of the sound box exercise (see school D sound box in Appendix H).

## **Compositions and Sound stories**

Thirteen compositions were completed (some of them worked in pairs) and all of these are included in the School D folder on the DVD. All the children produced sound stories on paper, as a number of them were not comfortable using Word documents. These were produced as storyboards made up of eight sounds with each section representing a sound, an example of this is shown in Figure 4.9 (also see Appendix J). Interestingly there were few stories produced with a horror or sci-fi theme, but as with school C the children were not shown how to use the time stretch effect. An issue that arose was a tendency to push volume levels high in Audacity that sometimes resulted in distortion (for example see SDcomp5 on the DVD). Some of the boys in the class in particular appeared to enjoy high levels and this was also a theme in some of the subsequent case studies.

Many of the stories related closely to the recordings and focused on life at the school, rather than using the cinematic references often evident in school A and B. For example, the storyboard (SDcomp1 on the DVD) in Figure 4.9 is the story of a hero based on the popular PE teacher at the school who featured in some of the recordings made by the pupils as he led a PE class. The sequence of sounds in the piece broadly follows the storyboard. This example mainly includes manipulated voices and laughter, which were often a fascination for children in many of the case studies. The piece has a sense of fun and it is clear the pupil spent time experimenting in Audacity to create these sounds.

Overall, the majority of compositions do have a link with the corresponding storyboard. It is interesting that all the narratives relate to a day at school and there is a close connection with the sounds the children recorded, giving them particular relevance to their everyday lives. In the previous case studies the narratives were less grounded in the sounds that were recorded, and the level of abstraction in those stories might have been due to the use of time stretch that often made the sounds less recognisable. However, to what extent the composition structures were led by the narratives or vice versa is not clear.

Despite some of the children appearing to have a lower level of ICT literacy than in school B (the only other year 5 group tested at this point) the level of the compositions in the end was as technically advanced (or in some cases possibly more advanced) than the work produced at school B. The children arranged, looped and added a variety of effects to their sounds although they did not have the confidence to explore the effects beyond those that were demonstrated by the researcher. The extra workshop did appear to help these children achieve this level of accomplishment. For example, as well as SDcomp1 described above, this is demonstrated by SDcomp2 and 3 on the DVD. SDcomp4 shows potential but this pupil perhaps required some more guidance about arranging and sequencing the sounds.

	<p>There was once an awesome man called Dinesh (Dhinesh) which was an fantastic PE coach.</p>		<p>He is the best coach ever. Dinesh is really popular in this school. lol</p>		<p>At lesson time it was boring so we decided to mess about &amp; lol</p>		<p>So Mr Brown decided to shout at us. lol</p>
	<p>So our hero Dinesh came and calmed everybody which really helped. lol</p>		<p>Nearly at the end of the day Dinesh did a PE lesson with us.</p>		<p>We also pretended to be Mr Brown. lol</p>		<p>Mr Brown was sent happy we all laughed. Haha</p>

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Figure 4-9 School D storyboard example

## Responses to questionnaire

In total twenty children completed the questionnaires. Below is an overview of the responses:

### Q1 What did you like about doing these workshops?

Table 4-20 School D - common themes in response to Q1

Response	Number of mentions
Recording	7
Listening	5
Making/manipulating sounds	5
Creating sound stories / compositions	5

Recording was the most common theme for Q1 at school D, whereas it was only mentioned a few times in the previous case studies.

### Q2 What did you not like?

Table 4-21 School B - common themes in response to Q2

Response	Number of mentions
Nothing / liked everything	7
Bad behaviour	2
Soundwalk / workshop 1	2

As with other schools nothing was the most common theme in response to Q2. It is a reflection of the behavioural issues encountered at school D that this was mentioned twice in the responses.



**Q3 Do you think the listening practice helped you to create your sound stories?**

**Table 4-22 School D - responses to Q3**

<b>School D- responses to Q3</b>	
<b>Yes</b>	15
<b>No</b>	2
<b>Yes/No</b>	2

As in school C where this question was first included responses were very positive and supported the value of the listening practice.

**Table 4-23 School D - sample responses to Q3**

<i>SD1</i>	<i>Because then you know what sounds your gonna put together.</i>
<i>SD2</i>	<i>Yes, because then we could understand it more.</i>
<i>SD3</i>	<i>I think it did because if we didn't listen we wouldn't have been able to do these workshops.</i>
<i>SD4</i>	<i>No, I didn't like it because it was boring just walking around.</i>

The children found it difficult to clearly articulate how the listening practice aided their compositional work, but as demonstrated in comment SD1, 2 and 3 above there appeared to be an understanding that developing their listening skills was of fundamental importance to completing the workshops. Comment SD4 reflected a theme in negative comments that doing the soundwalk was 'boring'.

## Q4 Would you like to make a sound composition again in the future?

Table 4-24 School D - responses to Q4

<b>Yes</b>	16
<b>No</b>	3
<b>No answer</b>	1

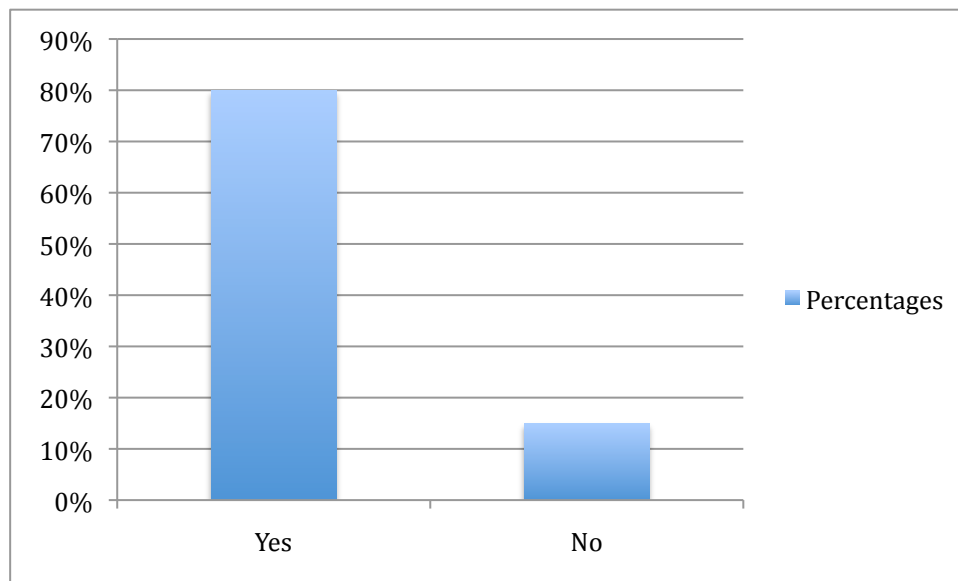


Figure 4-10 School D - graph of responses to Q4

Again a strong majority of the class answered positively to this question, which reflected the positive responses to this question across the first three case studies.

Table 4-25 School D - sample positive responses to Q4

SD5	<i>Yes cause it sounds awesome!!!</i>
SD6	<i>I think I would like to because it is really really fun.</i>
SD7	<i>Yes so we can listen more and make more sound stories.</i>
SD8	<i>Because it was really fun and exciting. And it made me get more creative so I think yes.</i>

**Table 4-26 School D - common themes in responses to Q4**

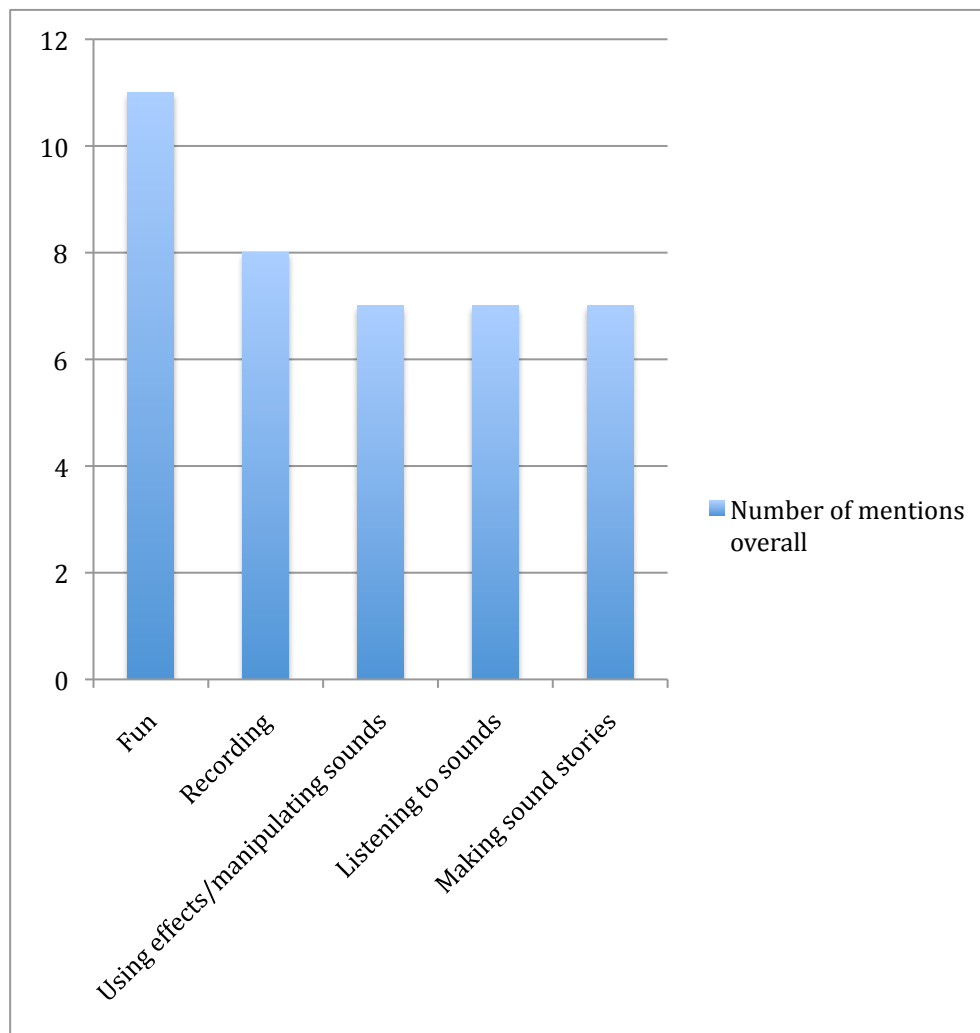
<b>Theme</b>	<b>Number of mentions</b>
Fun	10
Using effects/manipulating sounds	2
Listening to sounds	2
Sound stories	2

These four themes were the main ones in the previous case studies with 'fun' being the most common overall. Although recording was a common theme in answer to Q1 it was only mentioned once in response to Q4.

**Table 4-27 School D - sample negative responses to Q4**

<i>SD9</i>	<i>No, because I already did one and I don't need to do it again.</i>
<i>SD10</i>	<i>It's very hard to make a story. So no!</i>

As shown in comment SD10 above, the theme of the work being difficult was again present in negative responses.



**Figure 4-11 School D - common themes in positive responses overall (Q1 and Q4)**

The graph above shows the overall key themes when taking Q1 and Q4 together. It is clear that using the technology played an important role in engagement for this school, as combining the themes related to technology (using effects and recording) makes it the most common overall theme. However, as with the previous case studies the themes particularly related to creativity (using effects and making sound stories) also rate highly when combined and it could be argued that the recording activity involved creativity as well (in creating sounds using different objects).

## **Teacher feedback**

The teacher missed two of the workshops, which did have an impact on continuity and behavioural issues on those weeks in particular, but these instances were unavoidable. The full written feedback from the teacher can be found in Appendix I, but as shown in the excerpt below it was clear she felt the class had been engaged:

*I know that the children in my class really enjoyed using Audacity. They recently did a class assembly and it was one of the main things which the children wanted to share with the rest of the school.*

The teacher also highlights the value of listening in general and how it helped them with the creative work.

*They were able to listen to a sound and think about how to alter it to get the effect they required. I also feel that it was valuable for the children to actually listen to the sounds around them as I believe that children rarely take that time.*

## **Overall conclusions and themes**

### ***Difficulties***

- There were some difficult behavioural issues, including short attention spans and lack of focus at times, which was not helped by the main teachers absence on two weeks.
- The children appeared to have less advanced ICT skills for their age than school B (who were also Year 5). For example, the teacher had felt they would struggle with using Word to develop their sound stories, although there was a wide range of abilities.
- The soundbox exercise slowed some of their progress as it took them a long time to review all the sounds, which did not help to keep the children's focus.

### ***Successes***

- Despite problems, 80% of the children said they would like to have the opportunity to make a sound story again in the future and 75% said they thought the listening practice had helped them to do this.
- The extra workshop helped the pupils to produce more advanced work.
- As in case study 3, there was a connection made between the listening practice and compositional work, evidenced by their responses and the observations of the teacher.

### **Key themes**

- Interestingly, the time stretch effect was not used and there were very few stories produced with a clear horror theme. Additionally, all of the narratives were grounded in the source of the sounds recorded.
- Much of the work was focused on vocal sounds.
- The results supported the view that Year 5 children were more able to make progress using the software and technology involved in the workshops.
- The same themes emerged in positive responses as with previous studies with 'fun', creative activity and use of technology being particularly common for school D.

### **Actions for following case studies**

Apart from gathering further data on the common themes of the previous studies, it was decided that during subsequent case studies more data should be gathered following areas:

- Year 5 pupils' responses to the workshops as well as testing Year 6 groups, as the data from the first four case studies suggested that the workshops were more appropriate for older groups in Key Stage 2.
- To test the value of the sound box exercise in different schools to determine whether the particular problems at school D were connected to behavioural issues.
- The relationship between narrative and the compositional process, this appeared strong in school D but more data with older groups would be necessary.

### **4.2.5 Case Study 5**

#### **Overview of the case study – School E**

School E is a largely Asian school in the East Midlands. The school is in a very modern building with good facilities and an excellent ICT suite. According to the 2014 Ofsted report in which it was graded 'good', the number of pupils who speak English as an additional language is four times the national average. Also, the proportion of pupils eligible for free school meals is above the national average. Although some music is taught at the school there is not a dedicated music teacher and the opportunities and facilities for learning music mean that few of the children learn an instrument to a high level. There were thirty Year 5 children in the class.

### Written exercise and recording

In the second week they engaged in the written exercise and as with school D many of them struggled with this. Extra examples were provided and more of them started to make imaginative connections, as shown in the box below:

**Table 4-28 School E written examples**

1	<i>Hearing children laughing reminds me of being at the funfair and makes me excited</i>
2	<i>The sound of rattlesnakes reminds me of maracas and makes me want to dance!</i>

The second workshop began with recording the word for listen in Gujarati and English reflecting the diverse range of the students. Once the sounds were edited a selection was available for the pupils to use in their compositions as shown in the sound box (see Appendix H).

### Compositions and Sound stories

Twenty-three pieces (all of which are in the school E folder on the DVD) were completed (some children worked in pairs and some were not present each week); these pieces were in a wide range of development. Some of the pupils decided to start pieces again in workshop 5 meaning that these pieces are quite simple and short while some of them missed weeks and had difficulties remembering how to use Audacity. The narratives were not written down in Word documents (most of them ran out of time), but they were asked to create narratives, which they described when they introduced their pieces in the final concert. As a result the narratives were very underdeveloped and there were more themes than the previous schools, such as 'a game of basketball' (SEcomp1 on the DVD), 'world war 2' (SEcomp2, which uses reversed sounds to represent bullets), 'a rainy day at school' (SEcomp3) or 'break time' (SEcomp8).

SEcomp1 uses looping to produce rhythms out of footsteps as well as a whistle layered over the top to represent the game, while the piece ends with reversed



voices. This is impressive in its basic structure, which appears to have largely been guided by musical intuition. It could be argued that this demonstrates constructivist learning in progress as the pupil constructed their own understanding of how best to arrange the sounds through the process of composing sbm.

A number of other pieces also used rhythm (for example see SEcomp5, 7 and 10) and some of the children had just chosen to experiment with organising the sounds in ways that they liked and did not produce any theme. This could be compared to the 'bottom up' (Landy, 2012) approach to composition as described in section 2.3.2. This focus on the sounds rather than narrative was more apparent in school E than previously and was a theme that arose strongly in subsequent case studies; this led to the theory of the heightened listening scale (see section 4.4).

Again there was a tendency for some pupils to push volumes extremely high, but this was sometimes deliberate and part of their theme (for example one was just entitled 'Horror!', see SEcomp9) or provided an interesting contrast with a quieter section (for example see, SEcomp4), which again shows an intuitive understanding of musical structure. Additionally, some of the pupils experimented with effects that were not introduced by the researcher that they discovered for themselves in Audacity (this is demonstrated on piece SEcomp9 where the sounds pan from side to side). Also, as with previous case studies a number of the compositions use voice sounds.

## Responses to questionnaire

There were 24 pupils present in the final week to complete the questionnaires.

### Q1 What did you like about doing these workshops?

Table 4-29 School E - common themes in response to Q1

Response	Number of mentions
Listening / soundwalk	8
Recording	5
Making/manipulating sounds	5
Creating sound stories / compositions	4
Fun	2

As with school D, recording was a significant theme in the responses to this question, while the other four themes featured in all the previous studies.

### Q2 What did you not like?

Table 4-30 School E - most common themes in responses to Q2

Response	Number
Nothing / liked everything	14
Work missing/deleted	3

As with the other studies 'nothing' was the most common theme for this question. Missing work is a reflection of difficulties a few children had with saving work in the wrong place or deleting what they had done by accident.

### Q3 Do you think the listening practice helped you to create your sound stories?

Table 4-31 School E - responses to Q3

<b>Yes</b>	24
<b>No</b>	0

Table 4-32 School E - sample responses to Q3

<i>SE1</i>	<i>Because it helped me to notice all the different sounds you hear everyday</i>
<i>SE2</i>	<i>It helped me to know that there is sound everywhere</i>
<i>SE3</i>	<i>Because it gave me an idea on what to do my sound story about</i>
<i>SE4</i>	<i>Because I made brand new sounds and had to listen carefully</i>
<i>SE5</i>	<i>Yes as it gave you ideas what to use</i>

The explanations above can be largely divided into themes of widening aural awareness (comments SE1 and 2) and helping with developing ideas for compositions (comments SE3, 4, and 5).

### Q4 Would you like to make a sound composition again in the future?

Table 4-33 School E - responses to Q4

<b>School E - responses to Q4</b>	
<b>Yes</b>	23
<b>No</b>	1

As can be seen above all but one pupil answered positively to this question, which reinforces the positive results of the previous studies.

**Table 4-34 School E - sample positive responses to Q4**

SE6	<i>I would like to learn more</i>
SE7	<i>Because I loved the weeks listening to sounds and making a sound story</i>
SE8	<i>So I can teach other people</i>
SE9	<i>Yes because I liked making the sound story because it was creative</i>
SE10	<i>Yes because it will help me to have more listening skills in the future</i>
SE11	<i>I like the technical stuff</i>

Comment SE9 above shows acknowledgement of how creativity played a role in engagement, while comment SE10 suggests that interest in developing listening skills further was important for this student and connected with composition.

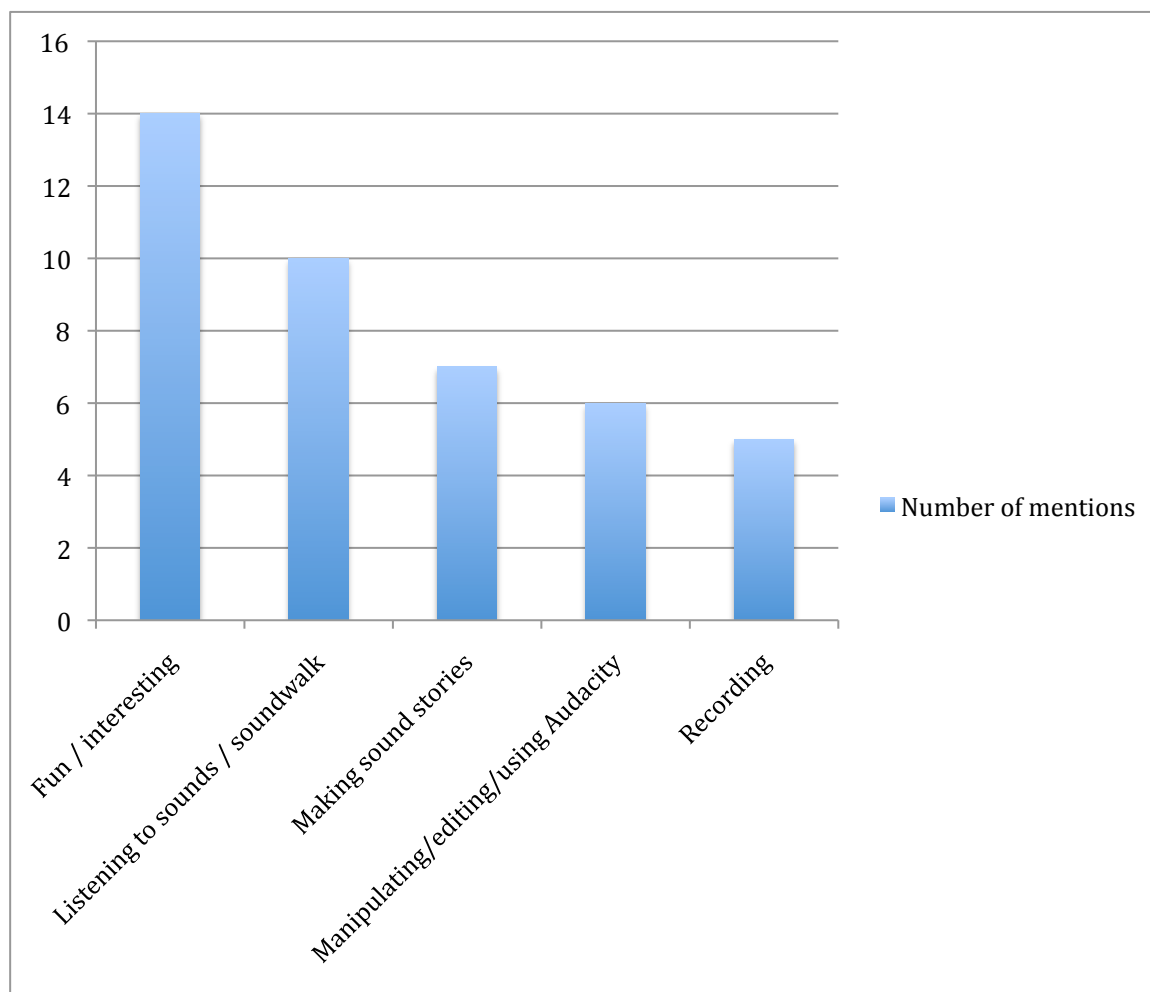
**Table 4-35 School E - common themes in positive responses to Q4**

<b>Theme</b>	<b>Number of mentions</b>
Fun / interesting	14
Making sound stories	3
Listening	2

As can be seen in table 4.35 above, ‘fun’ was by far the most common theme in explanations for engagement in school E, with making sound stories and listening being the only other themes mentioned more than once. However, although an answer of ‘it was fun’ demonstrates engagement it does not really provide detail as to why they found it ‘fun’. This is explained to some degree by the answers to Q1, which focus more on explaining what aspects they particularly liked, which as with previous case studies can be split up into the main themes of creativity and listening practice.

<b>School E - sample explanations for negative responses to Q4</b>	
SE12	<i>No because it is confusing and very hard to do and it is lots of hard work</i>

Again this was a common explanation for negative responses across the case studies.



**Figure 4-12 School E graph of themes from positive responses overall (Q1 and Q4)**

The graph above shows the most common themes in positive responses overall by combining responses from Q1 and Q4. These were all recurring themes in the previous case studies, although recording only emerged as a significant theme in school D.

### **Teacher feedback**

The teacher feedback was largely unstructured and informal, but for this case study the teacher asked for some questions to help focus the feedback (see Appendix I for the full feedback). As shown in the excerpts below, this teacher particularly highlighted the value of the listening practice for the children and also how the workshops helped to develop skills that would be useful in other subject areas.

***What do you think worked well in the workshops?***

*The chance for the children to actually listen carefully and for them to stop and listen to their surroundings. The sound walk was great! I know they loved using the recording equipment and the editing software.*

***Do you think any of the skills they have learnt in these workshops will be useful in other subjects?***

*ICT skills are always useful. We could use some of the skills in topics around the science area of sound. Using sound recorders, even going on sound walks could all be incorporated into other subject areas.*

## **Overall conclusions and themes**

### **Difficulties**

- There was again a lack of continuity with the main class teacher not there every week and pupils missed weeks due to other events.
- Pupils losing or not being able to find work and sometimes forgetting basic skills each week.
- As with school D, the sound box (see Appendix H) exercise slowed down their progress with making the compositions. They did not seem as engaged with that task and some of them took a long time over it.

### **Positives**

- Really strong engagement with the soundwalk, recording and working with Audacity as well as a very positive response from the teacher.
- 100% of the class felt that the listening practice helped them with their work.
- Some pupils produced very promising work.

### **Key themes**

- This case study reinforced the importance of a supportive teacher being present for each workshop. The children were more focused in the weeks when the teacher was present.
- Although they were encouraged to produce them, narrative did not play a central role in the work produced in this case study. Many children just developed simple themes for their pieces, while others focused on sonic experimentation without reference to a story.
- The same common themes were present in explanations for positive responses as in the previous case studies.

### **Actions for following case studies**

Based on the themes that arose, it was felt necessary to investigate the effect of the following actions in the next case studies:

- Reducing the number of sounds in the sound box exercise.
- Focusing on the role of narrative, is it helpful for all children?

## **4.2.6 Case Study 6**

### **Overview of the case study**

School F is a small private day school for pupils aged from three to sixteen years in the West Midlands. According to information taken from an Independent Schools Inspectorate report in 2011, which found that teaching in the school was good with pupils' personal development described as outstanding, results in national tests indicate that the ability of children in the junior school is above the national average, with a fairly wide range of abilities represented. The school population includes a range of ethnic, cultural and social backgrounds.

This case study partially overlapped with case study 5 so the actions identified in case study 5 were not implemented in this school. It was the first organised with a Year 6 class and was also the only case study in a private school. The teacher was very supportive and had previous knowledge of electroacoustic music. These sessions were part of a timetabled music lesson. Sixteen children took part and the majority of them could play a musical instrument to some level.

### **Written exercise**

Generally, the children concentrated very well on the soundwalk and the teacher complimented them on this at the end. Additionally, the children appeared to find it easy to distinguish between high or low-pitched sounds, which might have been a reflection of their musical experience. The written exercise was completed without much difficulty and the children provided a number of examples with strong links to memories and use of the imagination, as shown in the three examples below.

**Table 4-36 School F written examples**

1	<i>Wind rustling reminds me of Africa when I was on safari, it makes me happy</i>
2	<i>The sound of birds tweeting is like people whistling</i>
3	<i>The wind blowing some wind chimes reminds me of a train whistling, its bells clanging, just about to crash into a mountain</i>

### **Recording**

Only ten children were present for the recording activity (due to preparations for a school open day) and it was decided to approach this activity differently to the previous case studies. After recording various voice sounds in pairs in order to learn how to operate the recorders, the whole group worked together and recorded one sound at a time, meaning the focus was more on the quality of the recordings rather than the quantity. This was made easier by the small group size, although a similar approach was taken in case study 7 with a larger group.



When the children started their work in Audacity the following week, these recordings were supplemented by recordings made on the soundwalk as well as some generic sounds collected from other schools.

### **Compositions and Sound stories**

The children in this group were quite independent and had a high level of ICT literacy. They were also quite easily distracted at times so it was decided that it would be better not to do the sound box exercise. Additionally, they seemed to be making progress through experimentation in Audacity and the exercise slowed progress in other schools.

Unfortunately, due to an unforeseen timetabling issue the ICT suite was not available for the workshops so the pupils had to work on seven laptops, meaning that they worked in pairs or groups of three. There was also no shared drive on which they could save work, which caused delays each week as work was loaded onto laptops from an external drive. Fortunately each workshop lasted one hour and twenty minutes, as this was the length of the music lesson.

After the fourth workshop the pupils were required to do some creative writing in relation to sounds as homework in order to help develop ideas for their narratives. For this work they were asked to write a paragraph explaining an idea for a sound story based on the sounds from their school. Some of these were simply pieces of writing about listening rather than narratives, often relating to the soundwalk, such as the example below:

*When we went on the sound trip it felt like I was in a parallel universe because everything was silent I could hear the wind, the birds, airplanes, trees and lots of other noises, it was really good.*

Others were stories with horror themes that often referenced the school and related to the sounds they had recorded, such as in the example below. The quotes refer to the voice sounds they recorded:

*Stomp. Stomp. Stomp. Thoughts were going through my mind when I heard a voice. "Hello Mr young boy", it kept on getting louder until another voice spoke "this is fun" that voice also got louder, as if it was fun scaring me. The sounds of paper came as I imagined them opening my curtains and more footsteps, as they grew closer to my bed I heard them say "we are the ghosts of (school name)." I woke up in a cold sweat and realised it was a dream.*

In total six pieces were completed by groups of two or three students. The final narratives were not written down in a Word document, but they were asked to describe their stories or themes when they introduced the pieces in the final concert. However, many of these were quite vague and undeveloped; the clearest one was for 'Alien invasion', concerning an alien invasion in the countryside, which can be found on the DVD (SFcomp1).

Most of the pieces (see, for example, SFcomp2, 3, 4 and 6) used loops of vocal sounds and created rhythms from them with some clear parallels to popular music. However, these were mixed with other sounds and were at times quite inventive (see SFcomp1 and 5). This group were used to creating music in different forms so it appeared that their previous experience influenced how they made these sound-based pieces. Unfortunately, sharing the laptops meant that they often resorted to listening to their pieces through the speakers, which meant levels often distorted and that they could not spend a lot of time listening to more subtle aspects of the sounds. Working in groups also meant they were more easily distracted from the work and resulted in some disagreements. Pupils missing on certain weeks also affected the continuity of the workshops and sometimes the pupils started their work again from scratch rather than continuing with some promising ideas. This made it difficult for all of them to fully apply the model used by Savage and Challis (2002) (that was discussed in section 2.2.3) over the course of the workshops.

### **Responses to questionnaire**

Fifteen children were present in the final workshop and completed the questionnaire.

## Q1 What did you like about doing these workshops?

Table 4-37 School F - common themes in response to Q1

Response	Number of mentions
Making/manipulating sounds	8
Creating sound stories / compositions	2
Collaborating	2

Again creativity was the key theme in engagement. Creative freedom in previous case studies had appeared to help children, particularly the more able ones, make progress; this was something that they often enjoyed as highlighted by comment SF1 below:

SF1	<i>I liked the freedom to choose what sounds we could choose and the freedom to make our own compositions</i>
-----	---

As highlighted in section 2.2.3, such autonomy is a key condition for intrinsic motivation.

## Q2 What did you not like?

Table 4-38 School F - common themes in response to Q2

Response	Number
Listening exercises/soundwalk	3
Nothing / liked everything	2
Collaborating	2

There were a few in this group who found the listening exercises uninteresting, and three of them mentioned it in response to Q2. The explanation for this was that they found it 'boring' as can be seen in comment SF2 below.

SF2	<i>I didn't like the soundwalk because I found it a bit boring to walk round listening to everyday sounds</i>
-----	---

**Q3 Do you think the listening practice helped you to create your sound stories?**

**Table 4-39 School F - responses to Q3**

<b>School F - responses to Q3</b>	
<b>Yes</b>	13
<b>No</b>	2

**Table 4-40 School F - sample responses to Q3**

<b>Sample explanations</b>	
SF3	<i>It helped to give me some inspiration</i>
SF4	<i>Because we know what sounds go together from listening to them together</i>
SF5	<i>Because we can be creative and imagine our own sounds</i>
SF6	<i>Because it tunes my ears</i>

Despite listening practice being a theme in some of the responses to Q2, a strong majority of the class felt this practice helped them to create their compositions.

**Q4 Would you like to make a sound composition again in the future?**

**Table 4-41 School F - responses to Q4**

<b>School F - responses to Q4</b>	
<b>Yes</b>	9
<b>No</b>	6

**Table 4-42 School F - most common themes in positive responses to Q4**

<b>Theme</b>	<b>Number of mentions</b>
Fun / interesting	6
Making sound stories	4

Two thirds of the group answered positively to this question, which was lower than any previous group. This is interesting as this was the oldest group tested in phase 1. However, there were many other factors such as the poor ICT provision that could have influenced engagement. Also, because of the culture of the school the children already had opportunities to be creative with sound, which made these workshops less of a novelty. This demonstrates the complexity of the interconnected factors that influence engagement. However, as in the previous case studies ‘fun’ and creativity were the key themes in the positive responses.

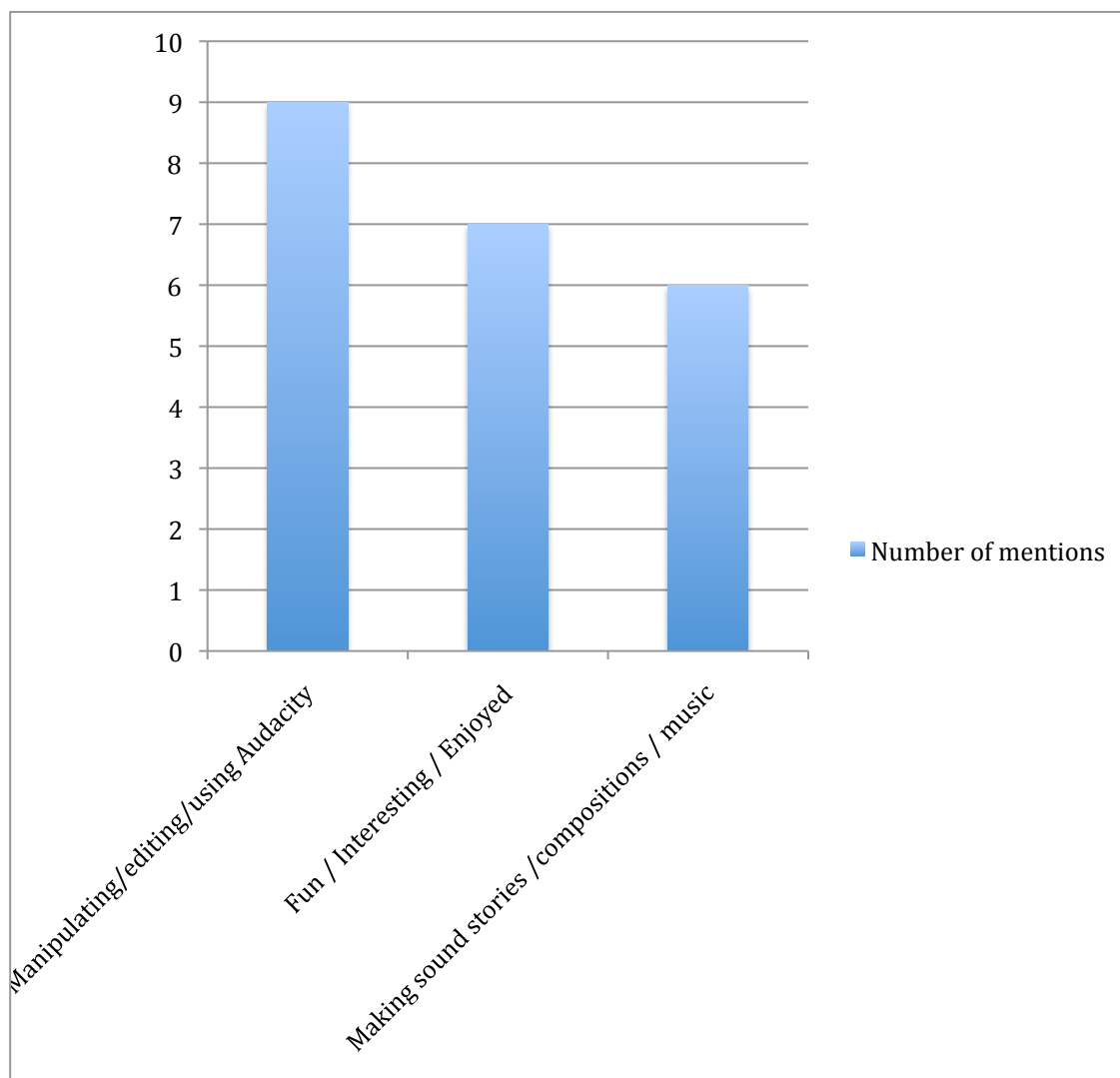
**Table 4-43 School F sample positive responses to Q4**

<i>SF7</i>	<i>Because its fun to see how you can create music</i>
<i>SF8</i>	<i>Because its creative</i>
<i>SF9</i>	<i>Because I really enjoyed making them, something to finish, to aspire to!</i>

Five out of the six negative responses mentioned that they had found it boring, as can be seen in comments SF10 and SF11 in Table 4.44. Comment SF10 might give an indication as to why this was by mentioning ‘glitches’, which could relate to the poor level of ICT facilities available in this case study. Comment SF12 shows the connection between novelty and engagement. As Ryan and Deci (2000) suggest, novelty plays an important role in intrinsic motivation and it seems that this pupil was suggesting that as they had already composed sbm doing it again would no longer be a new experience or ‘surprising’.

**Table 4-44 School F - sample negative responses to Q4**

<i>SF10</i>	<i>I find it boring and too many glitches</i>
<i>SF11</i>	<i>Because it is a bit boring</i>
<i>SF12</i>	<i>No because I like new things and surprises</i>



**Figure 4-13 School F graph of positive responses overall (Q1 and Q4)**

As can be seen in Figure 4.13, three of the same major themes emerged in the positive responses to Q4 and Q1, although unlike many of the previous schools listening practice was not common as a theme in these answers.

### **Teacher feedback**

The same questions were given to this teacher as at school E (see Appendix I for the full feedback), although this teacher also provided much feedback anecdotally over the course of the workshops in conversation. As can be seen in the excerpts below, it is interesting that the teacher highlighted that the listening practice helped the class to understand the concept of using sounds in composition rather

than conventional musical instruments. This teacher also felt that the workshops had benefits for a number of other subjects.

***Do you think the listening practice helped the children to make their compositions? If so, in what ways?***

*I think it got them thinking about the concept of using sounds in composition rather than just using proper/real instruments. I think most of the pupils understood the concept of using found sounds rather than using conventional instrumentation.*

***Do you think any of the skills they have learnt in these workshops will be useful in other subjects?***

*English - for the way they describe sounds*

*Maths - categorising/structuring sounds into sections in the computer software and counting timings*

*ICT - use of computer software*

*Geography - identifying locations and suitable places to hear sounds*

*Art - creative use of sound collage*

## **Overall conclusions**

They were a lively, articulate group who had a generally high level of ICT literacy.

## **Difficulties**

- The ICT arrangements in the school were quite disorganised and there was no shared drive on which to save work.
- The workshops took place in the final lesson of a Friday afternoon, which on occasion appeared to significantly affect the children's focus and attention.
- Working together on laptops meant they often listened through the laptop speakers rather than headphones, this meant they tended to put the levels up very high and a lot of their work is distorted as a result.
- The group work was seen positively by some of the students but others had disagreements often over who should be controlling the laptop.

## **Positives**

- The children were very positive about an example of sbm that the researcher prepared out of their sounds.
- In general they learnt the software more quickly than in any other school.
- The strongest piece from this school is possibly more advanced in its use of effects than any previous school with a story relating to an alien invasion (see SFcomp1 on the DVD).
- The teacher was very pleased with their work and recommended that more workshops be organised at the school.

## **Key themes**

- Despite producing written narratives as homework, most of these were not used to help structure or form compositions. They seemed to enjoy experimenting with the sounds in Audacity, as indicated by the themes in the questionnaire responses, but in many cases this did not clearly link with a theme or narrative.
- Although the majority of them answered positively, there were more negative responses than at any previous school to whether they would like to make a sound story again. This is interesting as this was the only Year 6 group tested up to this point.
- They did appear to be significantly more mature than in any of the other schools with the most advanced ICT skills. Additionally, it was interesting that they appeared to want to make their pieces into something more closely related to pop music, especially by using loops to create rhythms. This could have been related to previous musical experience as a number of them played an instrument.



- Creativity was again a key theme in positive responses.
- They seemed most inspired by vocal sounds and focused on these probably more than in any other school, although this might have been influenced by the smaller variety of other sounds that had been recorded

#### **Action points for next study**

Once this case study was completed it was decided to review the results of all the case studies in order to identify key themes and points of action for the next phase, these will be outlined in the following section.

#### **4.2.7 Summary and evaluation**

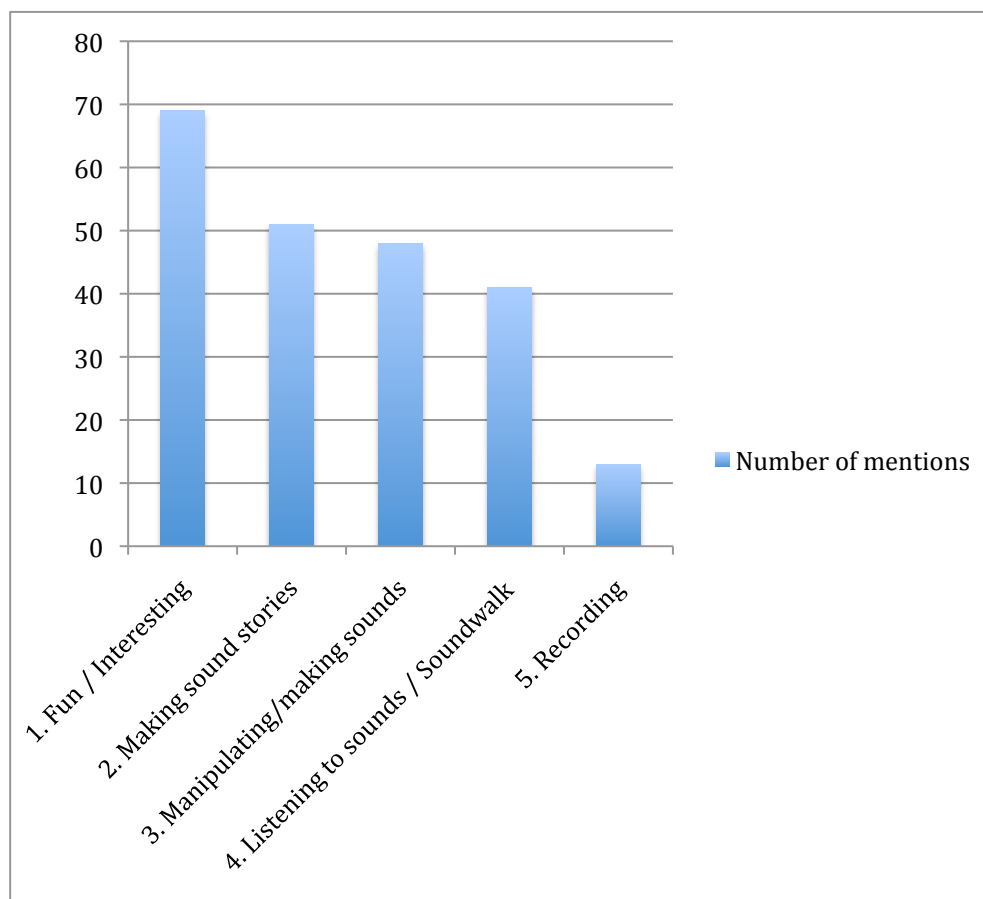
This section will examine the overall results from phase 1 and look at the common themes that emerged and guided the next phase of the research.

#### **Overall findings and themes from phase 1**

Overall, 82% of those who completed the questionnaire said they would like to make a sound composition again in the future.

**Table 4-45 Phase 1 overall responses to Q4**

<b>Q4 Would you like to make a sound story again in the future?</b>	
<b>Yes</b>	<b>99</b>
<b>No</b>	<b>20</b>
<b>Unsure</b>	<b>2</b>



**Figure 4-14 Phase 1 graph of themes in positive responses**

The themes shown in Figure 4.14 recurred across the case studies in phase 1. Within these the theme of creativity is the strongest with themes 2 and 3 both directly involving creativity. This is supported by Csikszentmihalyi's (1996) view of creativity as something enjoyable, discussed in section 2.2.3. The theme of using technology is also strong with themes 5 and 3 both directly connecting to this. The theme of listening was also fairly common in positive responses and this was supplemented with data from the question on listening practice that was added to the questionnaire from case study 3 onwards. As can be seen in table 4.46, overall 85% of those asked felt the listening practice had helped them to create their sound stories. The potential of listening as a creative tool has been recognised by other pedagogical projects (for example McGinley, 2001), but to use it to support KS2 children in sound-based compositional work is something that makes the HL2 doctoral project distinctive.

**Table 4-46 Phase 1 overall responses to Q3**

<b>Q3 Do you think the listening practice helped you to create your sound stories?</b>	
<b>Yes</b>	<b>57</b>
<b>No</b>	<b>4</b>
<b>Unsure</b>	<b>6</b>

Although there were not many negative responses, the common themes for these were that they found the work boring, hard or confusing.

The mind map in Figure 4.15 shows the different codes and categories that emerged from the coding of the data in phase 1, in accordance with the grounded theory approach. These themes guided the foci of the research into phase 2 and enhancements made to the project in accordance with these will be described later in this section.

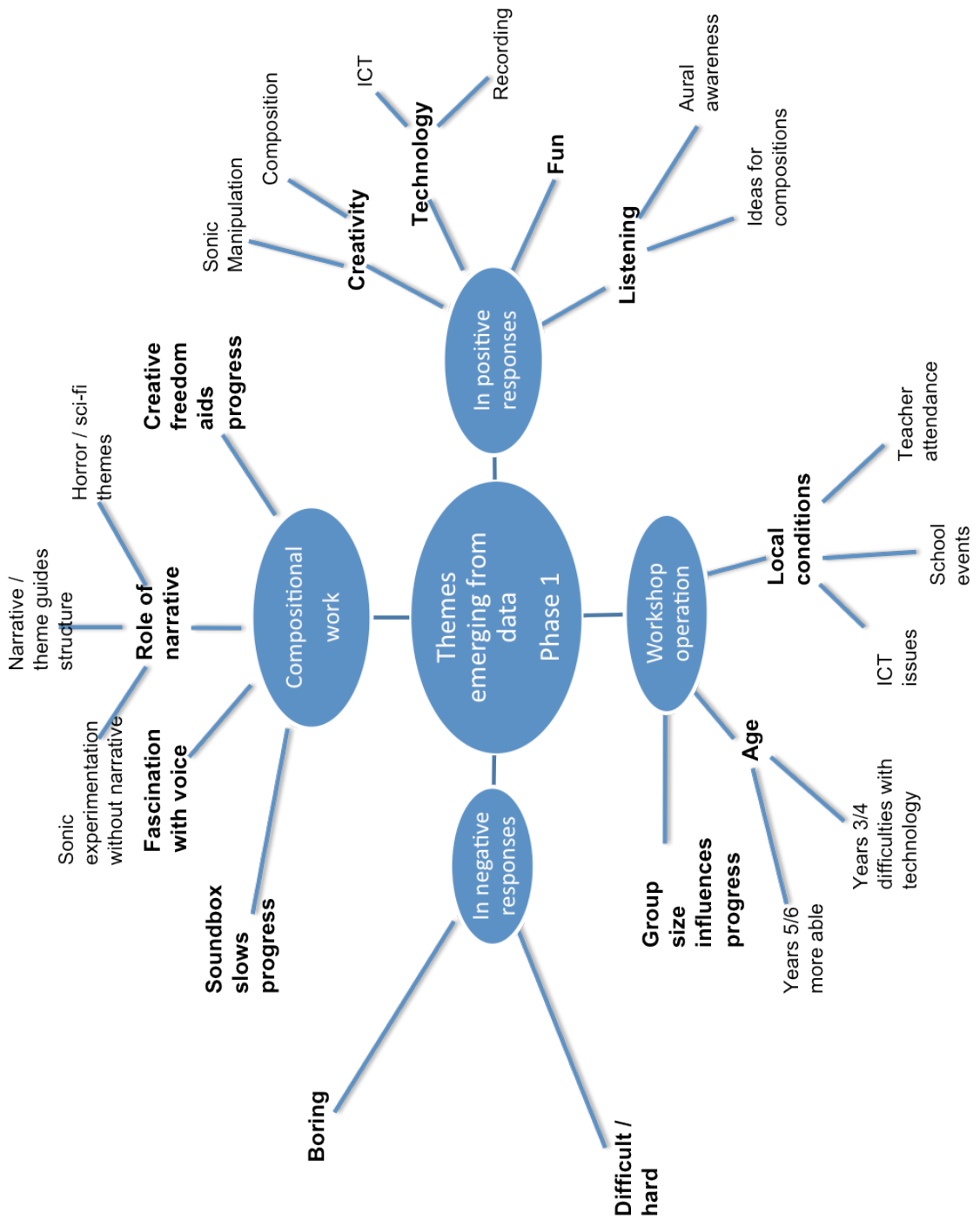


Figure 4-15 Mind map of phase 1 codes and categories

### **Themes connected with compositional work:**

- ***Role of narratives*** - Creating a narrative might not inspire children who are uncomfortable with creative writing. Obviously, children have strengths or interests in different areas and so will respond differently to various approaches, as acknowledged in chapter 2 in relation to Gardner's Multiple Intelligences (1999). Additionally, learning the software was a challenge and the children often became engrossed in it. This meant it was sometimes difficult to shift their focus to forming narratives. However, narrative was helpful for structural guidance and played a greater role in certain schools (for example in School A, B and D) than others (school E and F). The development of a narrative appeared to guide the choices made for some of the compositions even though this often changed over time through experimentation with effects and editing.
- ***Sound box exercise*** – In the schools where this was used progress was slowed when too many sounds were included.
- ***Freedom*** – The children appeared to make the most progress when they were given the freedom to experiment, which was particularly evident in school F where they had a high level of ICT ability. This supports the underlying constructivist philosophy (see section 2.2) of the research that exploratory activities are necessary for pupils to construct their own knowledge. However, guidance was still needed for children to learn the basic skills, which is also supported by Vygotsky's concept of the Zone of Proximal Development as discussed in section 2.2.2.
- ***Horror or sci-fi theme*** – This appeared to be particularly related to the use of time stretch and distorting levels.

- ***Voice recordings*** – These captured the children’s attention in every case study, probably because they were familiar and clearly connected to their own lives.

### **Themes connected with workshop operations:**

- ***Local conditions*** – For example, ICT facilities, school events, the socio-economic profile of the school, teachers’ attendance and classroom management can have significant influence on the progress made in the workshops. This supports the view of complexity theory, that there is a complex web of intertwining factors that will influence a particular system.
- ***Group size*** – Some of the most advanced compositions came from schools where class size was relatively small, although this was not always the case and obviously depended on other factors such as age.
- ***Age*** – Phase 1 involved children ranging from Year 3 to Year 6. Engagement was high across all the groups, although 90% of the Year 3 and 4 children said they would like to make a sound composition again, compared to 80% of the Year 5 and 6 children. The most negative responses came from the Year 6 class but there were many other factors in that particular school that influenced the results. The standard of work and ability to learn the software appeared most advanced with the older groups.

### **Action points for next phase**

Below is an outline of the enhancements that were made to the project for phase 2 based on some of the themes that emerged in phase 1.

#### **1. Focus on older age groups**

It was decided that the next phase of tests should be targeted at Year 6 children. This was because in the first phase the older groups appeared more able to learn the software and produce a higher standard of work.

## **2. Loosening the role of narrative**

Following the review of the first phase it was decided that the emphasis on narrative in the creation of sound compositions should be reduced. In phase 2 there was more emphasis on creating themes rather than a structured 'story' to help guide the compositions. This in particular was due to the response of children in school E and school F who had produced more themes than structured narratives.

## **3. Development of a sound bank**

For the second phase of the research a sound bank was created containing a selection of general 'school ambiances' collected from previous case studies. This meant that the recording in each new school could be more focused on quality and recording technique.

## **4. Simplifying the sound box exercise**

It became evident in phase 1 that the number of sounds available to the children should be kept to a minimum of approximately 15 sounds so as to reduce the amount of time needed to review them during the sound box exercise.

## **5. To work with schools that could meet particular conditions**

Due to the negative influence of certain local conditions in phase 1 (as identified above) it was decided that phase 2 should involve schools that could meet the following conditions:

- That the workshops should not be on a Friday afternoon.
- That the school would have adequate ICT facilities.
- That the teacher would be able to attend the majority of the sessions in order to support them (obviously this depended on circumstances).

From this analysis it is clear that the main objectives of the research were supported by the case studies in phase 1. Participation in the process of developing sound compositions based on listening practice resulted in high levels of engagement. Additionally, responses suggest that the listening practice aided the majority of the children in making their compositions. This supports the aim of heightened listening as a compositional tool that can be creative and inspirational. The themes outlined above were further investigated in phase 2 and the listed enhancements were made to the project.

## **4.3 Phase 2 – Narrowing the focus to older groups**

### **4.3.1 Introduction**

As stated in the previous section, the main purpose of phase 2 of the research was to gather more data on the older age groups in Key Stage 2 especially Year 6, as this age group had only been involved in one case study in phase 1. Additionally, in phase 2 agreements were sought (see section 3.3.4) with the schools involved to place work on a SoundCloud page created for each school, which the children could access and share with friends or family if they wished. Two schools in the West Midlands were involved in phase 2, but case study 8 involved working with three separate classes of Year 5 and 6 pupils. Both schools were visited simultaneously, so actions were not determined from each case study to be applied in a following case study. Rather themes were developed from the data that emerged concurrently from both case studies leading to theories that were further investigated in phase 3. These theories will be described in the final section of 4.3.



### **4.3.2 Case Study 7**

#### **Overview of the case study – School G**

According to an inspection report made by the Diocesan Education Service in 2013, school G is a Catholic, smaller than average primary school in an area with some social deprivation in the West Midlands. Only 20% of the pupils come from an ethnic minority, which is the smallest proportion out of all the schools visited previously apart from school B. The number of pupils eligible for free school meals (48%) is well above the national average and is one of the highest proportions out of all of the schools visited across the whole project.

In school G the children worked on their compositions on laptops (as in schools C and F) but there were only enough for them to work in pairs while sharing headphones, which was similar to the situation in school F. However, unlike school F, there was a school network that included a shared student drive that work could be saved on and there was plenty of space for the children to all work in one room. It was therefore decided that the ICT facilities were adequate to meet the requirements of the workshops. Twenty-two Year 6 children participated in the workshops.

#### **Listening and written exercise**

As usual, the workshop began with a listening exercise (Schafer, 2011) where the pupils were asked to sit down without making any sound. This provoked quite an interesting discussion about whether it could be possible. Some of the children were quick to point out that there will always be sound from the body as it's moving, which led to discussion about whether it was possible to have complete silence. It was interesting how the class discussed the nature of silence without really being prompted, which had not happened in previous schools. The discussion suggested that they were engaged with the subject and it successfully illustrated to them that there are many quiet sounds that we often do not pay attention to. This engagement continued in the minute's listening exercise where the pupils' appeared to concentrate deeply.

The soundwalk was longer than expected (over twenty minutes), but this was because the teacher felt they would be able to concentrate for longer and they did not seem to get distracted. This demonstrates the value of a teacher's contribution, being able to use their knowledge of the children to make these types of judgments.

After the soundwalk most of the class were keen to contribute and the session overran by around twenty minutes, which the teacher was happy with. As this was a primary school and the lesson was with the form tutor, she had autonomy over the lessons so was able to allow this extension. The lesson ended with the class being set homework for which they were required to produce a piece of writing describing interesting sounds they heard over the week, categorise them as they had done on the soundwalk and also write about what the sounds reminded them of. Examples were provided and the teacher put the assignment on their homework sheets so they could remember exactly what they needed to do, as can be seen in Fig 4.16 below.

This exercise was usually run at the beginning of the second workshop but, as this was a Year 6 group, the teacher was happy to set it as homework. This meant more time would be available in the second workshop and also that the pupils would be encouraged to continue with their listening practice outside of school.

In Fig 4.16 the child has made a connection between footsteps and music, demonstrating that he can recognise musical qualities in the everyday sounds he hears. In part of the example he says that:

*Breathing reminds me of frost, wind, life.*

This is a more reflective type of listening (as in the term created by Katharine Norman discussed in section 2.5.1) whereas the footstep association is made more in reference to the sound's qualities; both types of listening were encouraged as part of the listening exercises. What is also striking is that this is quite a poetical

reflection and Norman (1996:26) has made a connection between real world sbm and poetry. It is also reminiscent of the study conducted in Scotland by Wagstaff (2001) where children produced sound poetry based on listening to their local environment (see section 2.3.3). Other comments for this part of the exercise were more focused on memory:

*The computer's fan blowing reminds me of the first time I got a computer to use*

Listen to the sounds you can hear at home. Spend some time in silence, thinking about sounds you can hear. Write them down in the boxes below.

<p><u>Low</u></p> <p>Rain Wind Music Drawers opening Barking</p>	<p><u>Long</u></p> <p>Police siren Music barking</p>	<p><u>High Pitched</u></p> <p>Wind bike bell</p>	<p><u>Close</u></p> <p>Cars Bike bell bike bell</p>
<p><u>Quiet</u></p> <p>breathing Dog's barking footsteps talking</p>	<p><u>Short</u></p> <p>gosteps bike bell Pockets opening</p>	<p><u>Low Pitched</u></p> <p>Trucks Rain Drawers opening</p>	<p><u>Far away</u></p> <p>Trucks dickling honking of a car horn</p>

Which sounds did you like? Why?

I like the sound of bike bells because it makes me feel like its christmas. Rain dropping because it ~~is~~ loud or quiet. Music because you take the rhythm and the tone to create new songs.

Which sounds didn't you like? Why?

Trucks because it disturbs me and annoys me, dickling, because it gets frustrating when you hear the same sound every second.

Choose one of the sounds. What does it remind you of? (e.g. bees buzzing = summer, honey, being frightened, running etc.)

Breathing reminds me of fresh, wind, life. footsteps remind me of drums, music and ~~what's~~ sort of person someone is.

Figure 4-16 School G written example

## **Compositions and Sound stories**

For most of the recording session the class worked together, for example, by recording paper from different angles while other pupils made a variety of different sounds with it (tearing, screwing up, pulling) and recording footsteps in the school hall. For the last part of the session the children recorded outside in groups collecting sounds. These were edited down by the researcher and presented to the children for the sound box exercise (see Appendix H). After the experience in phase 1 where this exercise took up too much time, fewer sounds were provided for school G. However, the children had problems loading more than a few sounds at once as the computers kept freezing. This meant the exercise still took longer than intended.

Unfortunately, there was an error message that repeatedly came up on the laptops but only the IT person was authorised to fix this problem, which they were unable to do over the course of the workshops. Despite this issue some of the children produced pieces of a high quality (for example see SGcomp1 and SGcomp2 on the DVD in the school G folder) and eleven compositions were completed (they worked in pairs). The effects and tools available in Audacity were explored to a more advanced level than many of the children in phase 1 (for example see SGcomp2). A few of the pupils in school G had quite advanced ICT skills, although abilities varied noticeably across the class, as had been evident in other schools.

'The Lonely Ship' (SGcomp1 on DVD, see Figure 4.17) is well structured with an advanced arrangement. The sounds are panned and each one is given space to breathe in the composition. It starts with a cluster chord on the piano panned to the left, this chord is repeated throughout but is sometimes centred and sometimes panned left and right. It is also layered on different tracks and developed through manipulation using reverse and other effects. This is combined with a rhythmic scraping sound that is looped and a similar rhythmic paper sound. This demonstrates an understanding of how sounds with similar characteristics (in this case rhythm and timbre) can combine well together musically.

Eight of the children produced stories or themes to go with their pieces and six of the narratives were written into Word documents, while the others were explained in the concert. However, those (for example SGcomp7) who did not produce narratives or themes appeared to just experiment with the sounds in order to develop their pieces. All those that produced narratives had a horror theme and two examples of this are shown in Figures 4.17 and 4.18. There is evidence in the choice of sounds and manipulations of links with these narratives, as can be heard in the corresponding audio pieces for Figures 4.17 and 4.18. For example, in Figure 4.18 (SGcomp2 on DVD) the connection with robotic cats came from voice sounds the children manipulated that they thought sounded like a cat robot, which then fade at the end through use of delay (relating to 'Cat voices get weaker').

## THE LONLEY SHIP

The captain of a grand ship had been  
attacked by pirates of no mercy.

While the captain faces his death he plays a  
tune filled with sorrow and despair for his  
fallen comrades...

**Figure 4-17 School G narrative example 1 (SGcomp1 on DVD)**

## The sound story-Horror

Robots take over the world. There is no escape.

Nowhere to run, nobody is safe, robots will kill the humans, just to take over the world. Robots are everywhere the drums are played to worship them nobody can get away. Even their houses aren't safe. Robotic cats squeak of terror by humans even though they are stronger...

The world may or may not be taken over by the robots...

Cat voices get weaker.

**Figure 4-18 School G narrative example 2 (SGcomp2 on DVD)**



Some of the pieces use conventional musical sounds (such as a piano) in contrast to environmental sounds (for example, see SGcomp3 and SGcomp1). There was also evidence of an intuitive awareness of structure, such as in SGcomp4 where a reversed piano sound appears to trigger, at its climax, the sound of paper. Some of the sounds have been manipulated to the degree where they are no longer recognisable, for example in pieces SGcomp2, 6 and 5. The sounds in SGcomp5 represent a ‘horror heartbeat’ and this could be compared to a piece of ‘glitch’ music (a type of electronic sbm that is based on the manipulation of audio artefacts such as clicks that would usually be considered to be defects [EARS, 2007]).

### **Responses to the questionnaire**

Below is an overview of the responses to the questionnaire, which twenty children were present to complete.

### **Q1 What did you like about doing these workshops?**

**Table 4-47 School G common themes for Q1**

<b>Response</b>	<b>Number of mentions</b>
Listening/soundwalk	8
Everything	6
Recording	5
Manipulating/making sounds	4
Making sound story	3
Fun	2

As with the schools in the previous phase, the same themes arose in response to this question, with listening being the most common individual theme but those activities involving creativity featuring most strongly overall. The answer of liking everything was also a more common theme than in previous schools. Comment SG1 below highlights the importance of autonomy as well as novelty (which are factors that characterise intrinsic motivation as discussed in section 2.2.3), which

is also evident in comment SG2. The role that these factors played in engagement was a key finding of the research and is discussed further in section 4.3.4 and chapter 5.

**Table 4-48 School G sample responses to Q1**

<i>SG1</i>	<i>Getting to make our own music that nobody has made before.</i>
<i>SG2</i>	<i>I liked recording because I never used something like that recorder before.</i>

## **Q2 What did you not like?**

Four pupils left this question blank.

**Table 4-49 School G common themes for Q2**

<b>Response</b>	<b>Number</b>
Nothing / liked everything	8
Hard/difficult	3
Soundwalk	2

As with other schools ‘nothing’ or the work being difficult were the most common themes for this question.

## **Q3 Do you think the listening practice helped you to create your sound stories?**

**Table 4-50 School G responses to Q3**

<b>School G- responses to Q3</b>	
<b>Yes</b>	12
<b>No</b>	8

60% of the pupils answered positively to this question, which is less than any of the previous schools. The table below shows the themes in the positive responses.

**Table 4-51 Common themes in positive responses to Q3**

<b>School G – common themes in positive responses to Q3</b>	
<b>Theme</b>	<b>Number of mentions</b>
Helped with story/theme/imagination	6
Helped improve composition/music	3
Raised sonic awareness	2

The most common theme was that the listening practice helped them to form ideas for their stories as illustrated in comment SG4 below. It is interesting that comment SG6 below suggests that the listening practice facilitated a type of creative imaginative listening that relates to visual art rather than writing.

**Table 4-52 School G sample positive responses to Q3**

<i>SG3</i>	<i>It helped me and gave an idea of how to do it.</i>
<i>SG4</i>	<i>It helped me find the theme of the story.</i>
<i>SG5</i>	<i>Because listening to our music helped us to add things and improve.</i>
<i>SG6</i>	<i>I think the practice made me think deep into the sound to create pictures in my head.</i>
<i>SG7</i>	<i>It helped me to zone in on different sounds.</i>

The table below shows the themes in the six negative responses to this question and illustrates that there was not a clear theme in these negative responses.

**Table 4-53 School G themes in negative responses to Q3**

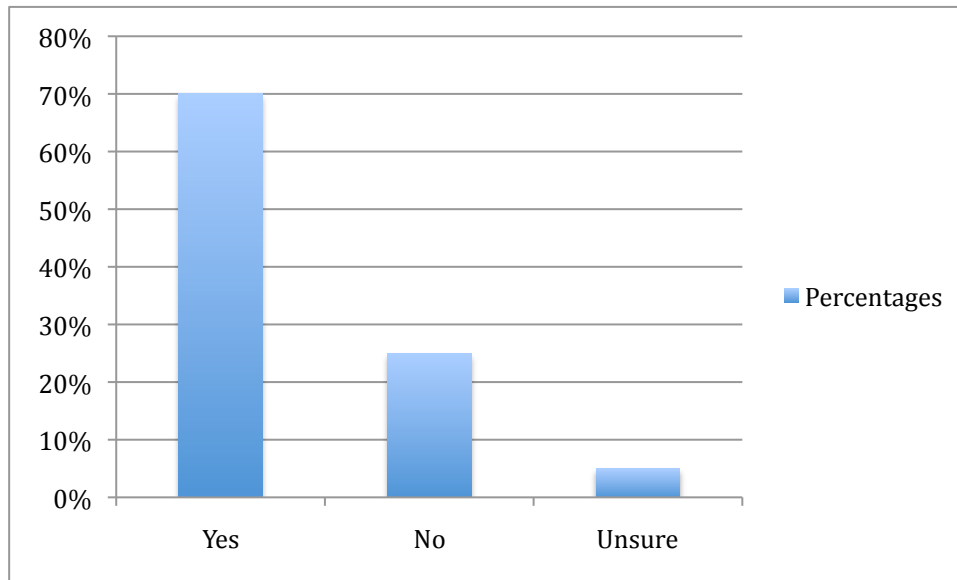
<b>Theme</b>	<b>Number of mentions</b>
Boring/didn't like it	2
Soundwalk different to sound stories	1
Already done listening practice	1
Music came from me	1
Didn't need it	1
Hard/difficult	1

However, being boring or finding the work hard were also themes in negative responses to Q4 and Q1 across the case studies.

#### **Q4 Would you like to make a sound story again in the future?**

**Table 4-54 School G responses to Q4**

<b>Yes</b>	14
<b>No</b>	5
<b>Unsure</b>	1



**Figure 4-19 School G graph of responses to Q4**

As can be seen above a clear majority of the children answered positively to this question.

**Table 4-55 School G themes in positive responses to Q4**

<b>Theme</b>	<b>Number of mentions</b>
Fun	9
Making sound stories	3
Listening	3
Manipulating/making sounds	2

The same common themes emerged as in previous case studies, but in this school the theme of ‘fun’ was clearly the most common. However, this theme relates to the activity of making sound stories and there is clearly much overlap between this theme and the theme of ‘making sound stories’ as indicated by comment SG11 in Table 4.56. It is interesting that listening was a theme again for this question as that suggests that listening is something creative, which was the role of the listening practice in this project.

**Table 4-56 School G sample positive responses to Q4**

<i>SG8</i>	<i>As well as it being fun it helps with your learning.</i>
<i>SG9</i>	<i>Because they are creative and they help you to know what you are like with music.</i>
<i>SG10</i>	<i>Yes because it would make me think about sounds and things related to it.</i>
<i>SG11</i>	<i>Yes because sound stories are interesting to make.</i>

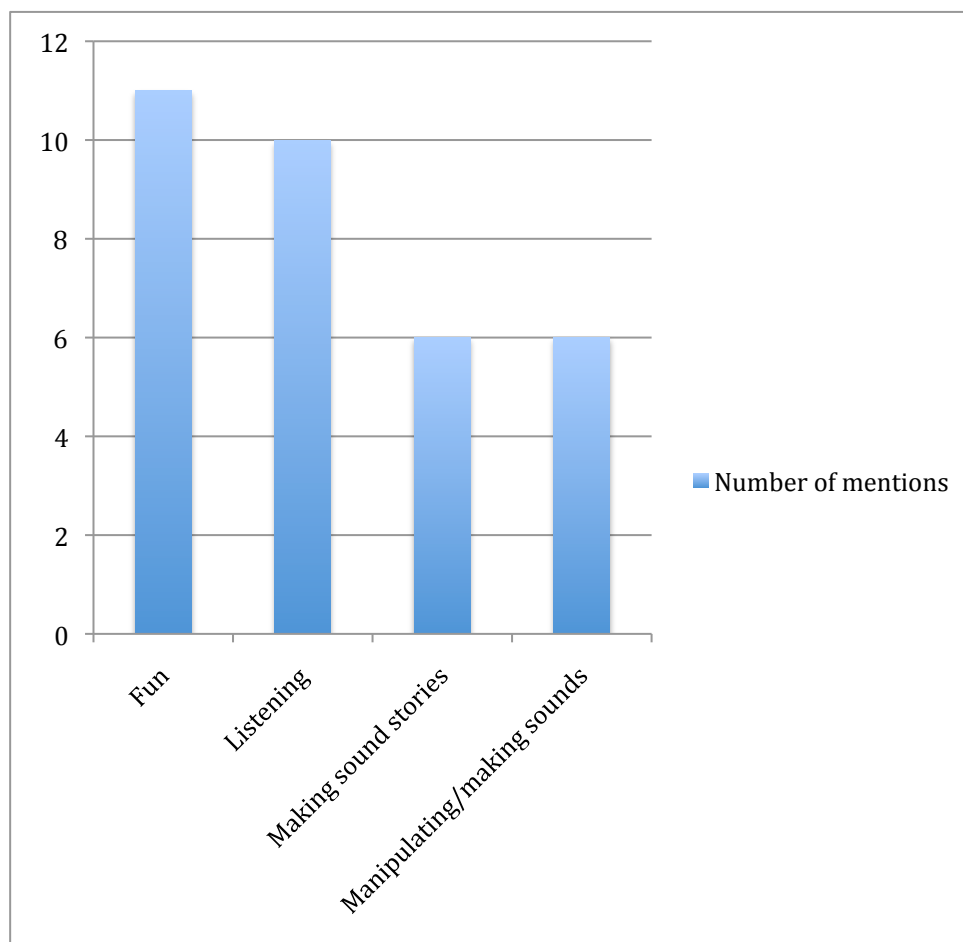
**Table 4-57 School G themes in negative responses to Q4**

<b>Theme</b>	<b>Number of mentions</b>
Boring	2
Hard	2

**Table 4-58 School G sample negative responses to Q4**

<i>SG12</i>	<i>If I wanted, I would create sounds electronically rather than using natural sounds.</i>
<i>SG13</i>	<i>Because it's kind of boring but can be fun.</i>
<i>SG14</i>	<i>No because I found it really hard.</i>

There appears to be a tension in the response shown in comment SG13 between whether the pupil felt the experience was boring or fun. This illustrates the complex and possibly contradictory nature of the reactions from some pupils. Additionally, comment SG12 implies that sbm can only use 'natural sounds', but sbm can be made using purely electronically created sounds, so it might be that this pupil would like to make sbm again but using a slightly different approach to that applied in these workshops. Comment SG12 is also interesting as it implies a basic awareness of electronic sound synthesis as an alternative option to using real world sounds.



**Figure 4-20 School G themes in positive responses overall (Q1 and Q4)**

The above graph shows the main themes that emerged in the positive responses to Q4 and Q1 combined. There were also two mentions of creativity being a source of engagement in other responses meaning that, combined with the other themes directly related to creativity (making sound stories and making sounds), this again was the most common theme in explanations for engagement overall.

### **Teacher feedback**

The feedback provided by the teacher after the workshops finished is provided in Appendix I. Questions were provided as guidance but it was explained that the teacher could comment on any aspect of the workshops. The teacher missed two of the seven workshops due to unforeseen circumstances. The teacher comments on high levels of engagement and the children's heightened awareness of sound as a result of the workshops.

*The children were incredibly engaged in the listening workshops, and became more aware of the sounds around them - they have commented on the background noises they can hear ever since! They also enjoyed the soundwalk, especially when they were able to record sounds. They then loved having to identify the sounds again the next week.*

However, the teacher was not sure if there was a link between the listening practice and the creative work.

*I don't think they gathered the link themselves - they enjoyed it when it happened, but didn't link it to listening carefully to their compositions to improve it.*

This seems at odds with the opinion given by the majority of the children in response to Q3, who indicated that the listening practice had supported their compositional work. For example, one of the composers of 'The Lonely Ship' said that the listening practice 'helped me to zone in on different sounds'.

The teacher also felt that the skills learnt will be useful in other lessons, which is something that has been indicated by other teachers, for example in schools E and F.

*The Audacity skills will be useful in their ICT lessons, and the listening and music skills practised will be helpful for science and music. We are moving on to a science unit of 'sound' next half term, so we are able to link this learning in well.*

It is also interesting that the teacher recognised the role of lengthening the sounds (through slowing them down) in the association with horror and also how outside influences might have contributed to this connection. This highlights how external complex factors influence the work that children produce.

*I think the noises being slowed down triggered it, because they sounded so strange. We are also reading a suspense story at the moment which might have made them think of the horror theme. However, they are exposed to some unsuitable content at home, which also means they often talk about gory things.*



## **Overall conclusions and themes**

### ***Difficulties***

- The pupils had to cope with some technical problems not encountered by other groups such as error messages in Audacity and laptops working very slowly.
- They had to work in pairs because of a lack of available laptops.

### ***Successes***

- High levels of engagement were evident throughout these workshops (as supported by the responses from the children and teacher) and the quality of work produced was impressive.
- This group had the most time across all the workshops as many of the sessions lasted for approximately one hour and twenty minutes

### **Key themes**

- One of the interesting outcomes of this case study was the children's interest in producing narratives at a point when the need to develop these was no longer emphasised. It is also interesting, but not unsurprising, that the theme of all these narratives related to horror stories.
- As with previous case studies, creativity and listening were the most common themes in positive responses.
- 60% of the children said the listening practice helped them with their compositions. 25% of these answers said it helped them to create a narrative or theme. However, 60% is lower than the number that answered positively to this in the previous case studies (which was 89% overall). This might be explained by the fact that unlike other schools (apart from school F) all the children worked in pairs so they had to share headphones

or played sounds back through the laptop speakers, both of which had an effect on opportunities for concentrated listening.

### **4.3.3 Case Study 8**

#### **Overview of the case study**

According to the 2014 Ofsted report, school H is a larger than average primary school in the West Midlands. The majority of children are from white British backgrounds with an average proportion from minority ethnic backgrounds. It says in the Ofsted report, in which it is graded 'Good' overall, that pupils develop good computing skills and the curriculum is described as exciting and engaging. There is a strong emphasis on 'experiential learning' in the school, which has not been an approach advocated in any of the other schools visited, and as in school F, creativity is valued and encouraged. The proportion entitled to free school meals is well below the national average (the school is in one of the most affluent areas visited in the project) and the school is graded outstanding for pupil behaviour. The children in this school were also not required to wear school uniforms. This is the only school in which this was the case.

The workshops were part of a music lesson, which had only previously happened in school F and school A. The workshops took place on Thursday afternoons at either 1.15pm or 2.15pm with three different classes each consisting of thirty Year 5 and 6 children. This meant that one of the three classes missed a session each week, which resulted in the workshops being spread out across a whole term. It also meant that, due to the timetabling, each class did not complete the same number of workshops, as shown in Table 4.59. This had an effect on the quality of the work produced in class 3, which overall was not as developed as the other classes (see audio examples in the School H folder). Additionally, it was interesting that positive responses were slightly higher in the class (2) that completed all seven workshops.

**Table 4-59 School H classes**

<b>Class</b>	<b>Number of workshops</b>	<b>Number of children</b>	<b>Number of questionnaires completed</b>
1	6	30	27
2	7	30	26
3	5	30	27

Despite the issues created by the timetabling this was viewed as a valuable opportunity to gather a significant amount of data from Year 5 and 6 children in a school with an approach to learning that had much in common with the constructivist view of the research. There were thirty children in each class but Table 4.59 also shows the number present in the final workshop for completing the questionnaires.

### **School H adaptations and overview**

Various adaptations were made to the workshops in school H largely at the suggestion of the teacher who believed these changes would suit the children and ethos of the school. These adaptations are described below.

### **Soundwalk**

As the children in school H were quite energetic the teacher liked to keep them engaged in activities as much as possible. Therefore rather than discussing the soundwalk as a class afterwards the children made sound maps (see Figure 4.21 below) of the walk in groups where they categorised the sounds and used symbols to show whether they liked or disliked the sounds.



set them homework. (They had quite a lot of homework in general that focused on numeracy and literacy.) Therefore, the children were not able to complete a written exercise at home, as they had done in schools F and G.

In each class the children seemed very engaged with using the recorders and were split into different groups working in the classroom and a small music room next door. A wide variety of sounds were recorded from around the school that included a number of percussion instruments, voice sounds and water from running taps, which were supplemented by the sound bank. The groups tended to jump from one thing to another. The teacher had described the children in the school as creative but slightly prone to distraction but that they thrived when given the opportunity to be practical and come up with their own ideas. This tendency appeared to be supported by the behaviour in each of the groups.

### **Compositions and sound installation**

The children in school H were very ICT literate in each of the three groups and clearly enjoyed the opportunity to explore Audacity and the different effects. Due to the energy of the children in school H, combined with their confidence and ability to explore, it was decided to not use the sound box exercise and allow them to choose the sounds by experimenting with them in Audacity. Additionally, the teacher had a background in IT and was familiar with Audacity so was very confident in demonstrating it to the children. This allowed the teacher to take the lead much more than in any of the previous case studies meaning for the first time in the project there was real shared teaching.

As illustrated in the modifications described in this section, the teacher used his knowledge and experience of the children and culture of the school to affect the way the workshops were presented. Also both the teacher and researcher were able to move around the class offering support. The teacher's confidence with ICT was obviously a factor in enabling this as was his attendance at every workshop, which were both issues that prevented some of the teachers in other schools taking more of a leading role. One key contribution of the project is to provide

resources for teachers to enable them to run the workshops with confidence in the future. A teacher pack and Audacity instruction sheets are available in the Appendices (see Appendix A and B) and the soundbank audio materials are available on request (see contact details under the Table of Contents).

Rather than working through the functions step by step, the teacher introduced some of the basic functions of Audacity at the start and then asked the children to try it for themselves. This allowed the children freedom to take the basic knowledge and explore it for themselves. As they were generally confident with ICT this was managed without many problems and the most able students were free to experiment without restrictions. In each class some of them discovered a variety of effects other than the ones demonstrated by the teacher and were obviously comfortable with experimenting.

The teacher had the idea of creating a sound installation that could be presented at a parents evening and also experienced by other children in the school. The installation involved triggering sounds and compositions produced by the children through an interface that was built from a computer keyboard (see Figures 4.25 and 4.26 below). The teacher documented the activities in the workshops (such as recording and using Audacity, see Figures 4.22 to 4.24 below) and the process of building the installation by taking photographs and produced a 'movie' called 'Listen!', which was shown to the children in the final workshop.



**Figure 4-22 School H soundwalk**



**Figure 4-23 School H using the digital recorders**

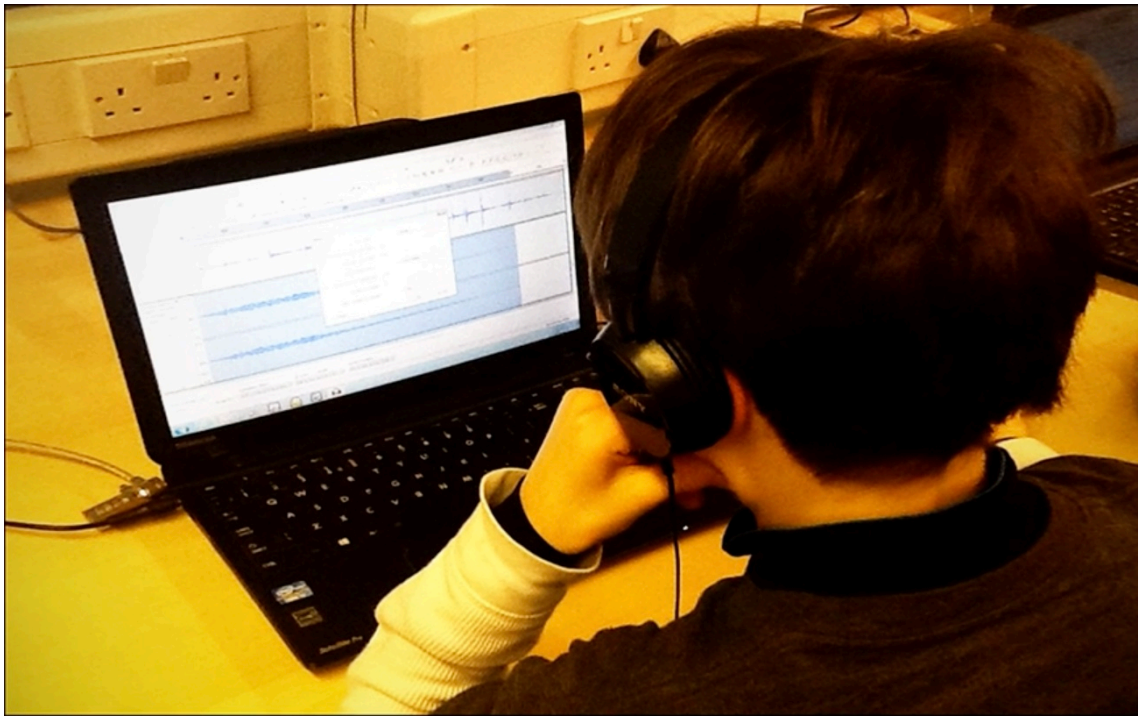


Figure 4-24 School H using Audacity

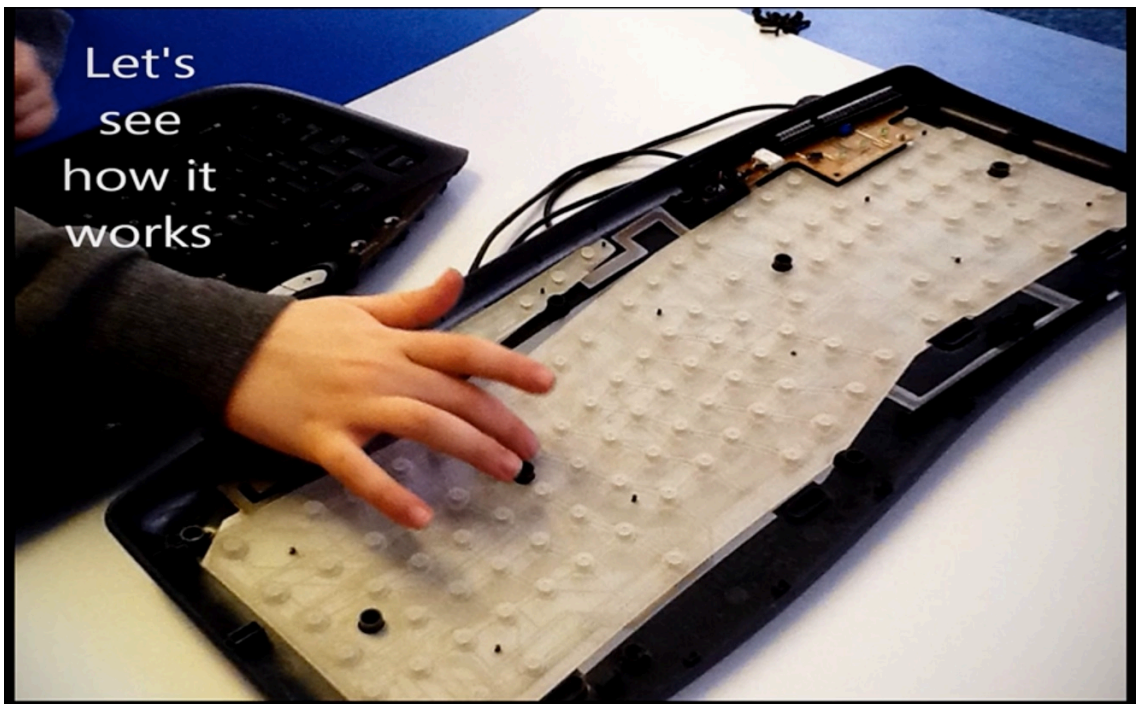
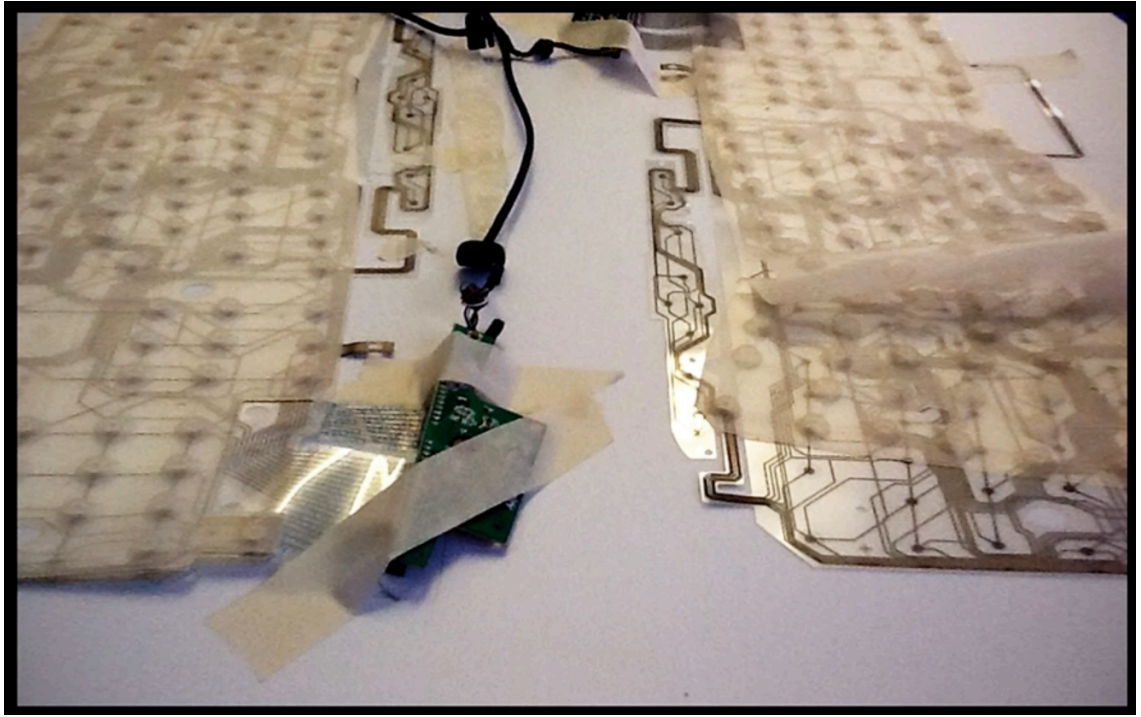


Figure 4-25 Building the interface



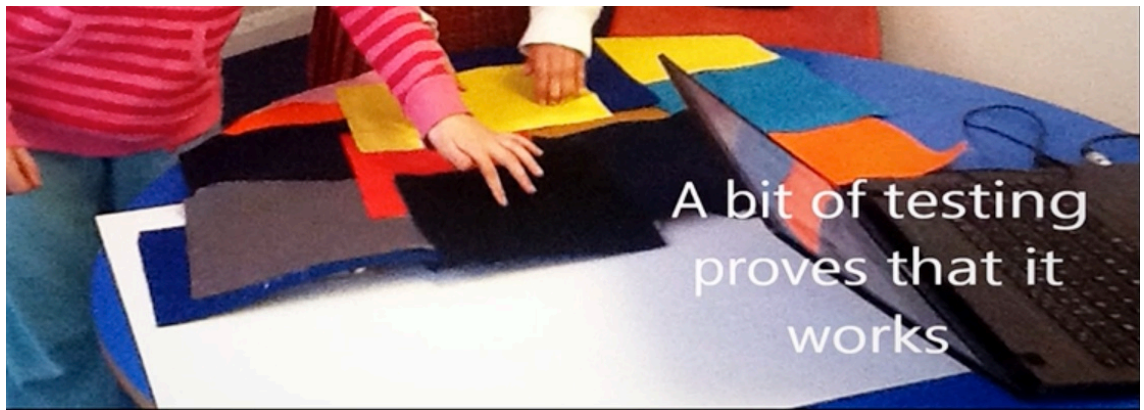


**Figure 4-26 Building the interface 2**

The interface was covered with different pieces of cloth which users could press down to trigger the sounds (see Figs 4.27 to 4.29 below). These sounds could be played simultaneously and looped, so the idea was that users could create live compositions of their own.



**Figure 4-27 Making the installation**



**Figure 4-28 Testing the installation**



**Figure 4-29 'Listen' sound installation**

The teacher asked some pupils from each class to work on this during the workshops to encourage them to take ownership of the installation. This approach also links in the experiential learning philosophy of the school (and of course the constructivist approach of this project).

Additionally, the teacher suggested that, rather than producing standard Word documents to write about their pieces, they produce Wordle documents (see examples from class 1 in Figures 4.30 and 4.31). For these documents words can

be arranged on the page in different colours and sizes. He thought this would capture the children's imagination and could be used to put around the edge of the installation. This was an interesting approach, as it engaged their imagination and language in a more dynamic way than just writing in a Word document and particularly suited the energy of the children in school H. It also allowed children to use different skills other than just those connected to language as had happened with the soundwalk map.

### **Class 1 Overview**

Unlike in school G the lesson could not run over time as the next group were due to start at 2.15pm. Unfortunately the second workshop started late, so it was decided to focus the session on the recording and not do the short written exercise.

Twenty-three compositions were completed which can be found on the DVD in the School H class 1 folder. A number of the pieces were quite accomplished, such as SHAcamp8, which creates light flutters out of speeded up mouth noises, paper and a steel drum. Additionally, many featured manipulation and looping of a short 'rap' that one of the pupils had recorded. As with the examples in school F, this meant there were obvious connections to popular music in the pieces. However, these vocal loops were also frequently combined with sound-based materials, which were sometimes manipulated in interesting ways.

For example, SHAcamp1 on the DVD uses a selection of sounds that have been time stretched and layered with the looped voice over the top. It is interesting that as this was a music lesson, and a number of sounds were recorded in the music room, some of the pieces are more conventionally musical featuring greater use of pitched materials and rhythms than in previous schools. For example, SHAcamp1 has an underlying harp sound that is time stretched and gradually rises in pitch over the duration of the piece, working in contrast to the rhythmic loop of the voice. Similarly, SHAcamp7 uses looped drum sounds to create a rhythm over which time stretched sounds are layered, such as paper, laughter, a squeaky door and a guitar.

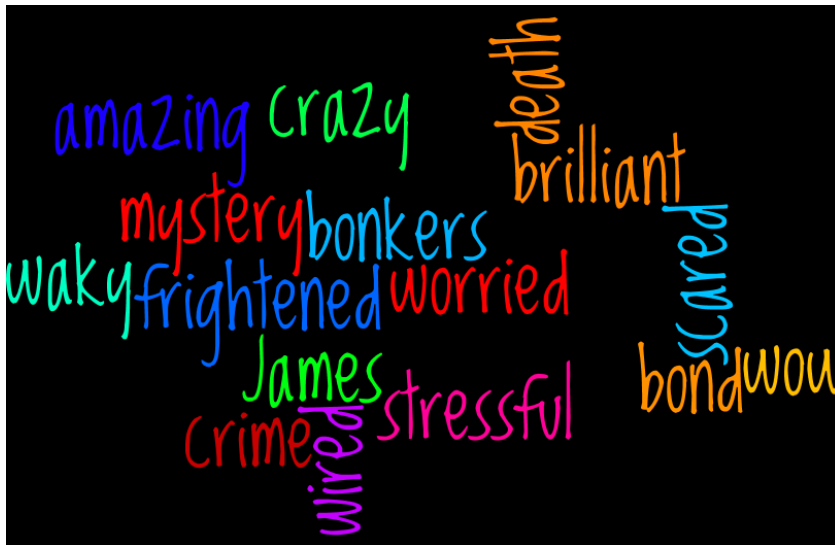


Figure 4-30 School H Class 1 Wordle 1 (SHAcamp5)



Figure 4-31 School H Class 1 Wordle 2 (SHAcamp4)

Fewer wordle documents (see examples above) were produced by this class than the other groups in school H. Also, only one of these includes a horror reference, although there were four references made to horror in titles for pieces such as ‘Freaky horror’ (SHAcamp6). The low number of horror references is perhaps surprising as time stretch was used frequently. However, there were some cinema references to James Bond (see Wordle 1 above, which corresponds to piece SHAcamp5), although it’s difficult to see how this connects with the composition

that uses a variety of sounds without a clear link. Additionally, there is a cinematic reference in the title of one of the pieces, which is called 'Awesome Film Start' (SHAcomp3); the piece was obviously envisaged as the opening soundtrack to a film.

However, only a few of the pieces included a theme and the majority of the children have given their names as titles; therefore, most of the children, when introducing their work in the final session, just described the types of effects and sounds they had used, as shown in Wordle 2 in Figure 4.31 (piece SHAcomp4). This particular piece uses mouth noises recorded by the children, which have then been sped up in the composition. All of the other sounds used in this composition are vocal, such as a recording of the class shouting 'It's snowing' that has been reversed and further processed. The piece also includes laughter, a voice that has been slowed down and the rap mentioned earlier. There was an evident interest in the voice with this class and they appeared to enjoy manipulating it as demonstrated on SHAcomp2 on DVD, which is a short piece where the rap sample has been manipulated in an innovative way in the opening section using editing and a range of effects. As in school G, a wider range of effects have been used overall compared with phase 1 and sometimes these were used to transform sounds beyond recognition (see SHAcomp9), although this particular piece sometimes creates contrast by using unprocessed sounds.

## Responses to questionnaire – Class 1

Thirty children took part in the workshops and twenty-seven were present to complete the questionnaire.

### Q1 What did you like about doing these workshops?

Table 4-60 School H Class 1 themes Q1

Response	Number of mentions
Manipulating/making sounds	9
Listening	7
Recording	5
Learnt something new	4
Fun	3
Using ICT/Audacity	3

Most of these themes have arisen in previous workshops, although it is interesting that learning something new was more prominent as a theme than ever before and making sound compositions (usually a common theme) was only mentioned once.

Table 4-61 School H Class 1 Q1 sample responses

SHA1	<i>I liked the fact that we all opened up to sounds everywhere that we couldn't hear before.</i>
SHA2	<i>I liked manipulating sounds that <u>WE</u> had recorded. (Their underlining and emphasis)</i>
SHA3	<i>I liked doing it, I learned not to chuck sounds in and ... to keep experimenting.</i>
SHA4	<i>I liked these workshops because we got to use equipment to make music that we've never used before and doing audacity.</i>

Comment SHA2 above demonstrates the independent nature of the children in school H and what an important part the recording activity played in the workshops. Comment SHA3 illustrates the role of experimentation in the learning

and creative process, which is one of phases in the model for composition used by Savage and Challis (2002) discussed in chapter 2. Comments SHA1 and 4 show how the opportunity to have new experiences was important for some of the children in this class.

## Q2 What did you not like?

Table 4-62 School H Class 1 common themes Q2

Response	Number
Nothing / liked everything	9
Soundwalk/listening	8
Repetitive	4

Although the listening practice was a common theme in answers to Q1 it also featured in the answers to Q2. This might be a reflection of the difficulty the children had with focusing unless they were engaged in something quite active and creative with a certain amount of independence. The teacher commented that the children in school H could get bored easily and required a certain amount of freedom to keep them engaged. This is the only time that the theme of being repetitive arose in answers to this question and could be connected to the timetabling issues that meant the workshops carried on for most of the term. As a result, even though they completed the same amount of workshops the perception was that the project was going on for a longer time than in other schools.

## Q3 Do you think the listening practice helped you to create your sound stories?

Table 4-63 School H Class 1 Q3

<b>Yes</b>	16
<b>No</b>	8
<b>Unsure</b>	3

60% of the class answered positively to this, which was the same as at school G.

**Table 4-64 School H Class 1 common positive themes Q3**

<b>Theme</b>	<b>Number of mentions</b>
Helped develop ideas	7
Raised sonic awareness	6

Helping with ideas was the most common theme for this in school G, although some of those answers were specifically related to developing themes whereas the answers in school H were often more concerned with developing the sounds as illustrated in comments SHA6 and SHA7 below, although comment SHA8 suggests a mixture of both.

**Table 4-65 School H Class 1 sample positive responses Q3**

<i>SHA5</i>	<i>Yes because stuff I heard outside I put into my sound story.</i>
<i>SHA6</i>	<i>Yes because it made me aware of sounds, and what sounds made sense together and what didn't go well.</i>
<i>SHA7</i>	<i>Because it gave you an idea of what the original sounds were and how different you were making them.</i>
<i>SHA8</i>	<i>Yes, because it helped think about things to base our stories on and effects that would make the sound more interesting.</i>
<i>SHA9</i>	<i>Because we learned to listen to the small sounds!</i>

**Table 4-66 School H Class 1 themes in negative responses Q3**

<b>Theme</b>	<b>Number of mentions</b>
Didn't need it	3
Soundwalk/listening practice and sound stories were different	1
Music came from me/my imagination	1
Boring	1
Need more listening training for it to help	1



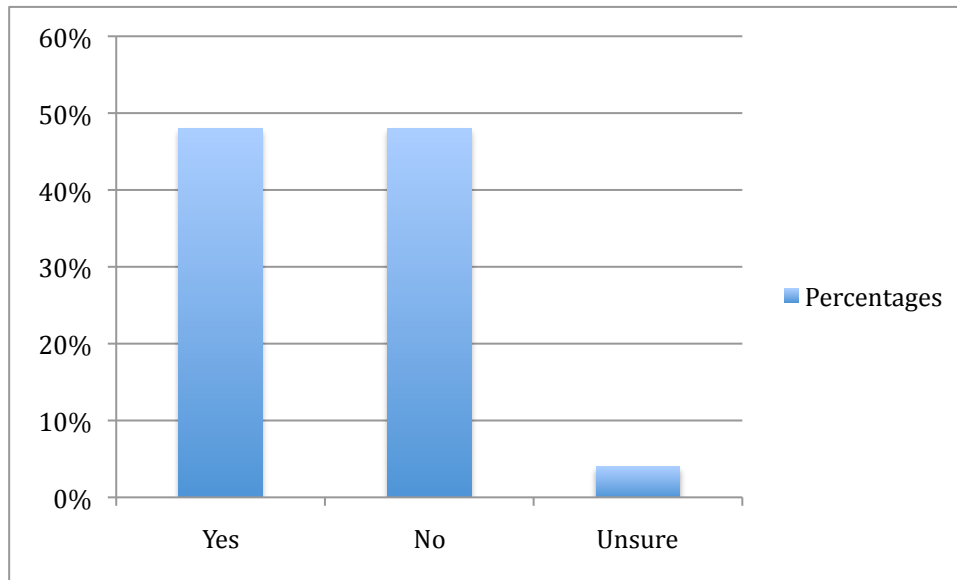
The table above shows the themes in the negative responses to Q3, with the sample explanations in Table 4.67. Comments SHA10 and SHA13 do not recognise the role of listening in creating the compositions, whereas comment SHA11 suggests that this pupil does not see how the listening training can be applied in different listening situations, which was also a theme in school G. Comment SHA12 is interesting as this pupil recognises that developing strong listening skills is something one needs to practice over time.

**Table 4-67 School H Class 1 sample negative responses Q3**

<i>SHA10</i>	<i>Because it was about trying new things not listening.</i>
<i>SHA11</i>	<i>Because they weren't the same sounds</i>
<i>SHA12</i>	<i>I didn't think it was useful because it would take longer to train our ears to listen out for everything.</i>
<i>SHA13</i>	<i>I think that the listening thing wasn't really necessary – we were making sound not listening</i>
<i>SHA14</i>	<i>No because we recorded the sounds and I put them in a way that sounded cool</i>

#### **Q4 Would you like to make a sound story again in the future?**

As is shown by the graph in Figure 4.32 there was a higher proportion of negative answers for this class than in any of the previous schools. This was surprising as observations suggested high levels of engagement. Thirteen pupils answered positively and thirteen negatively while one was unsure. This could be related to a number of factors that influenced the results in all the classes at school H, such as the effect of the timetabling and the culture of the school. Due to the opportunities available to these pupils, creative activity was not such a novel experience in school H. This is further discussed in relation to negative responses below.



**Figure 4-32 School H Class1 graph Q4**

**Table 4-68 School H Class 1 positive themes Q4**

<b>Theme</b>	<b>Number of mentions</b>
Fun	6

The only common theme in these answers was that it was fun, but there were other single mentions of previous common themes such as making compositions, manipulating sounds, listening and creativity. However, as can be seen in comment SHA17 in Table 4.69, a number of the pupils found the experience fun because they liked to manipulate the sounds, as also indicated by the responses to Q1.

**Table 4-69 School H Class 1 sample positive responses Q4**

SHA15	<i>I would because I could try some different sounds and different effects.</i>
SHA16	<i>I would like to do it again because not many people get to do it and it's really fun.</i>
SHA17	<i>Because it's really fun playing with different sounds to see what you can do.</i>
SHA18	<i>Because I found it fun making a sound story and it would be fun to do it again.</i>
SHA19	<i>Because it is rather peaceful and calm just to listen to sounds set carefully in order.</i>
SHA20	<i>I would like to do it again because I've never done anything like it before.</i>

**Table 4-70 School H Class 1 negative themes Q4**

<b>Theme</b>	<b>Number of mentions</b>
Boring/didn't like	4
Already done it would rather do other things	3
Hard/difficult	3
Not enough time	2

The themes of boring and difficult were common themes in negative responses across all the case studies. The theme of wanting to try new things is perhaps a reflection of the exploratory approach of the school and it might be that for these pupils, who seem to be looking for novelty, a sound composition could be something they would be interested in making again if it involved using a different approach, sounds or software. In comment SHA24 and 25 there is a tension between positive and negative feelings in relation to the experience. Comment SHA21 below reflects feelings expressed in Q2 that the workshops went on for too long.

**Table 4-71 School H Class 1 sample negative responses Q4**

SHA21	<i>Because I thought it took up a lot of music lessons.</i>
SHA22	<i>Because it's too much hard work</i>
SHA23	<i>I like doing new things more than things I have already done.</i>
SGA24	<i>Because I didn't really enjoy it but I did like all the technology and recording the sounds.</i>
SHA25	<i>No thank you because I have done it once and that was a nice experience but not for me! Sorry!</i>

Comment SHA21 also might indicate one of the reasons why negative responses were higher in this school where there were many opportunities already available for making music in a school that provides an interesting music curriculum and values creative activity. In this context the opportunities provided by the HL2 workshops might not seem as novel as in other schools and could affect these pupils' motivation to explore it further. This issue of motivation and novelty will be discussed further in section 4.3.4.

### **School H Class 2 Overview**

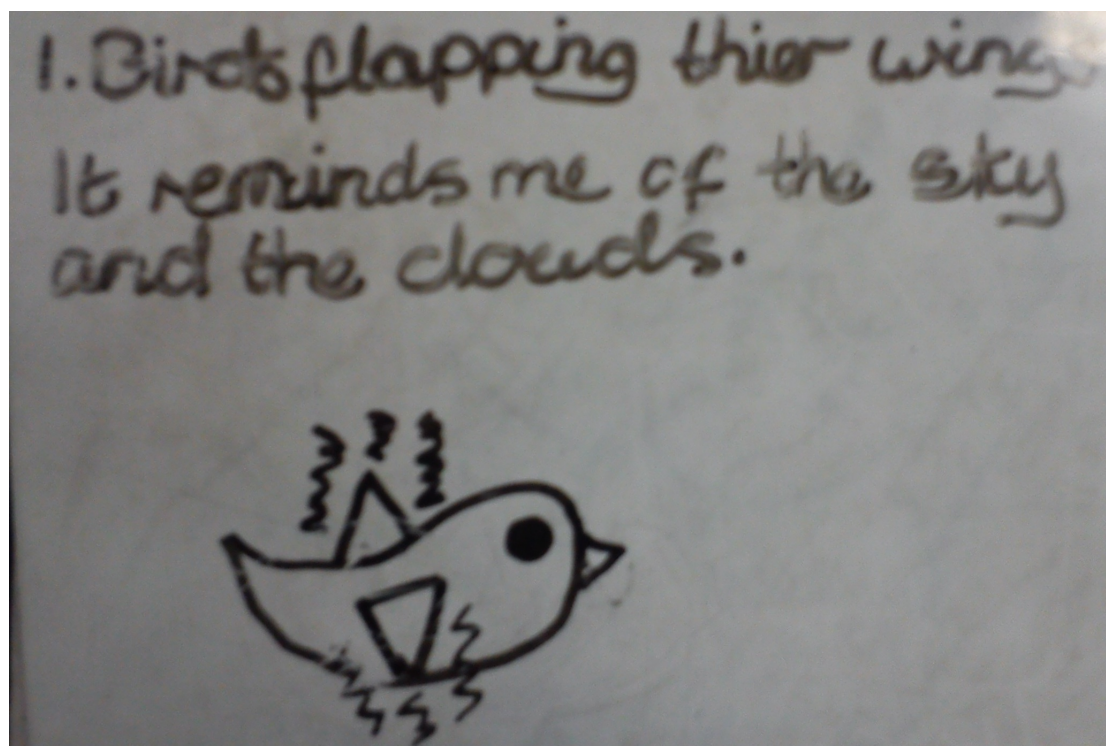
This was the only class at school H that completed the full seven workshops. They also were observed to be the most concentrated and engaged. Additionally, this was the only class at school H that had time to do the short written exercise where they considered what different sounds reminded them of. The group managed this without much difficulty and there were some imaginative examples, such as:

**Table 4-72 School H Class 2 written examples**

1	<i>I like birds chirping. It reminds me of when my friend plays the flute.</i>
2	<i>My dad stomping on wooden floorboards at home reminds me of gunshots.</i>

Figure 4.33 below provides a simple illustration of the idea that pupils have divergent imaginative approaches, meaning they will articulate thoughts and ideas

in different ways (as suggested by learning theories such as Gardner's multiple intelligences discussed in section 2.2.2). This pupil has not explored her listening imagination through words alone but has supported her writing with a rough drawing from her visual imagination.



**Figure 4-33 School A Class 2 written example 2**

In total twenty-four compositions were completed, which are all included on the DVD in the school H class 2 folder. A number of the pieces demonstrated technical skill and include arguably some of the most impressive work produced in the project (see SHBcomp1, SHBcomp5 and SHBcomp7 on the DVD). This view was supported by the teacher who was clearly impressed by the quality of the work and awarded some pupils extra 'house points'.



Figure 4-34 School H Class 2 Wordle 1 (SHBcomp3)



Figure 4-35 School H Class 2 Wordle 2 (SHBcomp2)



**Figure 4-36 School H Class 2 Wordle 3 (SHBcomp4)**

The pieces that accompany wordles 1 and 2 above both have themes that reference horror and there seems to be a connection especially between wordle 2 and the accompanying composition (SHBcomp2), which includes water and resonant sounds that could represent a cauldron. As is suggested by wordle 1, the short accompanying piece (SHBcomp3) with its chiming bell and slowed down voices could also be imagined as a horror film soundtrack. This was then slowed down even further in an alternate version (SHBcomp8). However, wordle 3 features the first name of the pupil (as do the others) and describes the composition much more in terms of the effects and sounds used rather than any reference to a narrative.

Some of the work demonstrated awareness of structure and form to a more highly developed degree than in previous schools. SHBcomp1 on the DVD demonstrates this and could represent evidence of simple taxonomic listening (see Delalande's term discussed in section 2.5.1). It is a collection of different sounds or moments in the school day punctuated by a bell that signals a change in sound. It has a clear simple structure with the group saying 'Listen' and 'Écouter' to mark the beginning and end. Also, in other pieces material has been chosen that has some kind of relationship, whether this be based on the functions of the objects or sonic characteristics. For example, in one piece the looped sound of a pencil writing is

combined with paper rips layered over the top (SHBcomp6). Also, as demonstrated by SHBcomp7 on the DVD, sounds that in the recordings have similar frequency content, such as paper and running water, were combined and contrasted with the texture of a stretched bell sound. This recognition or perhaps intuitive understanding that such sounds would combine well because of these relationships is impressive for a Year 6 pupil (10-11 year old) who has not encountered such music before.

Additionally, as demonstrated by SHBcomp5, a number of the pieces used loops to create rhythms. As also noted earlier in relation to class 1, some of the pieces were perhaps more conventionally musical than many pieces in previous schools, but this was partly because of the instruments that were recorded in the music room.

### **Responses to questionnaire**

There were thirty children in total in the class but twenty-six were present to complete the questionnaire.

### **Q1 What did you like about doing these workshops?**

**Table 4-73 School H class 2 common themes Q1**

<b>Response</b>	<b>Number of mentions</b>
Manipulating/making sounds	9
Making music/sound composition	6
Learnt something new	6
Using ICT/Audacity	5
Fun	3

The main themes relating to creativity that emerged in answer to this question in other schools arose again, but listening and recording (other previously common themes) were only mentioned once by this class. It is interesting that as with class 1 the theme of learning something new was present (see comment SHB1 below), which seems to be characteristic of the children in this school as it has not been a



significant theme elsewhere. The independent spirit of the children is demonstrated in comments SHB2 and SHB3 below.

**Table 4-74 School H Class 2 sample responses Q1**

<i>SHB1</i>	<i>I think it was a new experience for me that I've never done before.</i>
<i>SHB2</i>	<i>Making my own music.</i>
<i>SHB3</i>	<i>Making our own sound streams because you could make anything you wanted!</i>

## **Q2 What did you not like?**

**Table 4-75 School H Class 2 common themes Q2**

<b>Response</b>	<b>Number of mentions</b>
Soundwalk/listening	10
Nothing / liked everything	9
Spent too long on it	4

The soundwalk was mentioned by over one third of the group in response to this question, which is more than any of the other classes in school H although it was a common theme in each. The teacher felt that all the classes benefitted from the soundwalk but it had been quite difficult to get class 2 to concentrate on the listening exercises without talking. The class had come straight from PE and it was noticeable each week that the group whose workshop followed PE was more excitable, which could have had an effect on their perception of the soundwalk.

Liking everything has been a common theme in response to this question across the case studies and this also featured strongly in these answers. This could be that the children had been engaged in all the activities or it could be that it was easier to give this answer than think about which parts of the workshops they had not enjoyed. This unwillingness to write much detail, as discussed in section 3.3.3, is a

recognised weakness of questionnaires (Cohen et al, 2011: 209; Denscombe, 2014: 176). Additionally, it could be that they did not want to give a negative answer as it might offend the researcher or teacher (see Kopiez and Lehmann, 2008: 136). Both of these issues underline why it is important to have data triangulation. They also highlight the complexity involved in interpreting the pupils' responses, as there are many different contextual factors that could have influenced the nature of their responses. However, the fact that significantly high proportions gave this response across the case studies in a diverse range of schools, suggests that high engagement was playing a role in at least some of these answers.

Spending too long on the project was again a theme for class 2 but has not emerged in any of the other schools. As mentioned before, this could be connected to timetabling issues but could also be a reflection of the fast progress and ICT skills of this group combined with the children needing new stimulation to be kept engaged, as observed by the teacher. Once they had mastered using effects and sequencing sounds, some of them might have required extra stimulation to keep their attention on improving their compositions.

### **Q3 Do you think the listening practice helped you to create your sound stories?**

**Table 4-76 School H Class 2 Q3 responses**

<b>Yes</b>	14
<b>No</b>	11
<b>Unsure</b>	1

Despite the soundwalk featuring as a common theme in answers to Q2 the majority (54%) of the class felt the listening exercises were beneficial for the creative work. The two common themes in both school G and class 1 were also the most common for this class as shown in Table 4.77.

**Table 4-77 School H Class 2 common positive themes Q3**

<b>Theme</b>	<b>Number of mentions</b>
Raised sonic awareness	8
Helped develop ideas	5

Comment SHB7 shows how important the listening exercises were for choosing sounds in the recording workshop, while comment SHB5 supports the role of listening practice as being inspirational for the creative process.

**Table 4-78 School H Class 2 sample responses Q3**

<i>SHB4</i>	<i>I realized how many sounds there are that we don't think about.</i>
<i>SHB5</i>	<i>Yes because it inspired me</i>
<i>SHB6</i>	<i>It helped us to concentrate</i>
<i>SHB7</i>	<i>Yes because it gave us more of an idea of what we could record.</i>
<i>SHB8</i>	<i>I think it did because you got to know how they sound.</i>

**Table 4-79 School H Class 2 negative themes Q3**

<b>Theme</b>	<b>Number of mentions</b>
Didn't need it	2
Hear sounds all the time, already do it	2
Spent too long on it	2
Couldn't remember it	2
Music/ideas came from me/my imagination	2
Didn't notice any sounds	1

In some of the negative responses there was a feeling that the listening practice was unnecessary as they felt they already had sonic awareness, as shown in the first two themes above. The pupil who said he did not notice any sounds was actually removed from the class in one of the workshops due to behavioural issues.

He answered negatively on the questionnaire (apart from saying he liked Audacity) and mentions his exclusion. Therefore, it is likely his response to Q3 reflected these behavioural issues.

#### Q4 Would you like to make a sound story again in the future?

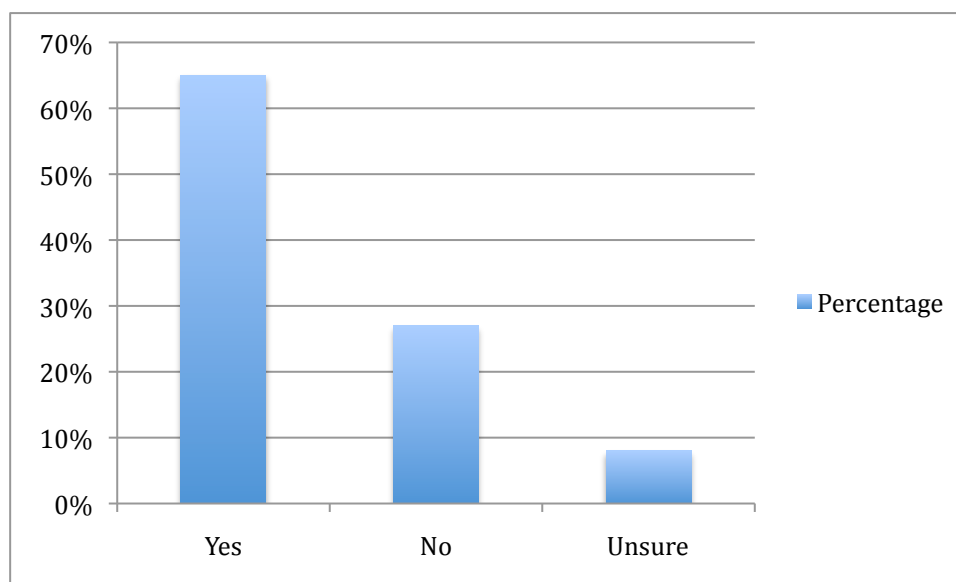


Figure 4-37 School H Class 2 Q4 responses

Seventeen pupils answered positively, while seven answered negatively and two were unsure.

Table 4-80 School H Class 2 positive themes Q4

Theme	Number of mentions
Fun	11
Manipulating sounds	4
Creativity	2

It was interesting that making sound stories did not appear as an explicit theme in these answers, although as previously discussed the theme of 'fun' is referring to the activity of making a sound story. It could be argued that all the themes above

could be included under the general theme of creativity, as demonstrated particularly in comments SHB11 and 12 below. Comment SHB9 is interesting, as this pupil appeared to enjoy the opportunity of making music using non-traditional technology. It seems surprising that this comment was not made more often as the workshops did represent a departure from what most of the children were used to doing in a music lesson. However, in the schools where music was not a regular part of the curriculum many of the children did not play instruments, so it is interesting that this comment has come from school H where music was valued highly.

**Table 4-81 School H Class 1 sample positive responses Q4**

<i>SHB9</i>	<i>Because I could make music without playing a instrument</i>
<i>SHB10</i>	<i>Yes because you can put your imagination in sound.</i>
<i>SHB11</i>	<i>I would because I enjoyed expressing myself through music.</i>
<i>SHB12</i>	<i>Because now I realize the benefits of sound and how creative you can be with sounds.</i>
<i>SHB13</i>	<i>Yes because I could change the sounds to how I like it.</i>

**Table 4-82 School H Class2 negative themes Q4**

<b>Theme</b>	<b>Number of mentions</b>
Boring/didn't like	2
Not enough time	2
Wouldn't learn anything new	2
Hard/difficult	1
Spent too long on it	1

Apart from 'wouldn't learn anything new' and 'spent too long on it' these were all themes in negative responses in class 1. However, the project taking too long is a similar theme to it being repetitive which was a theme for class 1. Comments SHB15 and 17 seem to suggest that the pupils felt they had learnt all there was to know about sbm composition and reflects the desire for new experiences that is a

theme in the responses from school H. Comment SHB16 suggests that this pupil could be interested in creating sbm again but their perception of it had possibly been coloured by the workshops being stretched over a whole term. It is also important to note that the numbers for each of these themes are low, meaning there was not a clear theme in the reasons for negative responses in this class.

**Table 4-83 School H Class 2 sample negative responses Q4**

<i>SHB14</i>	<i>I don't have an interest in this subject. I don't enjoy music much.</i>
<i>SHB15</i>	<i>I enjoyed learning how to use audacity but I wouldn't do it again because you wouldn't learn anything new.</i>
<i>SHB16</i>	<i>I thought it took too long. If I had time YES.</i>
<i>SHB17</i>	<i>Because I found it hard and I wouldn't learn anything next time.</i>

Despite these negative responses 65% of the class answered positively, which was higher than in the other two classes. It is interesting that this was the only group that completed all the workshops and also produced some of the most exciting work.

### **School H Class 3 Overview**

Although all the children at school H were lively, class 3 had the most behavioural problems. Class 3 only completed five of the workshops because of the arrangement of the timetable, which meant they did not complete the written exercise in workshops 2. However, as with the other classes at school H, some did produce Wordle documents to accompany their compositions (see two examples for class 3 in Figures 4.38 and 4.39). Seventeen compositions were completed by class 3 and they are not as accomplished in general as the other school H classes who had longer (see school H class 3 folder on the DVD). Despite this, some of them still managed to do advanced work that explored using a range of effects in the limited time they had (see SHCcomp1 – 3 on the DVD).



Figure 4-38 School H Class 3 Wordle 1 (SHCcomp4)



Figure 4-39 School H Class 3 Wordle 2 (SHCcomp1)

Probably due to the shorter time available to this class, many of the compositions were a little shorter than the other groups in school H. Wordle 1 above in Figure 4.38 corresponds to SHCcomp4, which mainly features the instruments recorded in the music room with minimal manipulation apart from some reverse and delay. This is an example of how a number of the pupils in school H were drawn to the more conventional musical sounds for use in their compositions. Although there

were more of these sounds recorded at school H there were still many non-instrumental sounds recorded. This tendency might partly reflect the pupils' previous musical experience in school H. Also, a tendency towards conventional musical forms was also noticeable in school F in which the pupils also had greater opportunities for learning musical instruments.

Composition SHCcomp1 on the DVD relates to the second wordle document (Figure 4.39). It obviously has a theme around an African adventure and involves mainly percussion and drum sounds. SHCcomp2 on the DVD was entitled 'Scary' and, although a wordle document was not produced, it features the prominent use of time stretched voice, which throughout the phases has been associated with the theme of horror. SHCcomp3 uses looped footsteps to create a rhythm that builds in intensity. It is interesting that, although rhythm was a common feature in some of the compositions in school H, this one does so using footsteps rather than any of the percussion sounds that were recorded in the music room.

### **Responses to the questionnaire**

In total twenty-seven children were present to complete the questionnaire. This group were very talkative and despite being asked not to some of them openly discussed their answers.

### **Q1 What did you like about doing these workshops?**

**Table 4-84 School H Class 3 common themes Q1**

<b>Response</b>	<b>Number of mentions</b>
Using ICT/Audacity	8
Listening/Soundwalk	7
Making music/sound composition	6
Manipulating/making sounds	5
Recording	4



These had all previously been themes in school H although listening and recording had not been themes for class 2. The opportunity to use ICT and learn Audacity was the most common theme, but it could be suggested that at least some of these answers are referring to the activity of manipulating sounds on a computer. Therefore, the overall theme of creativity again appears to be very strong in these responses, which emerged as a distinctive finding across the project. Comment SHC2 is interesting below as it suggests a link between the listening and creative work.

**Table 4-85 School H Class 3 sample responses Q1**

<b>Sample responses</b>	
<i>SHC1</i>	<i>When we made our own music and when we went on the sound walk</i>
<i>SHC2</i>	<i>I liked everything, the listening to sound, and changing those sounds.</i>

## **Q2 What did you not like?**

**Table 4-86 School H Class 3 common themes Q2**

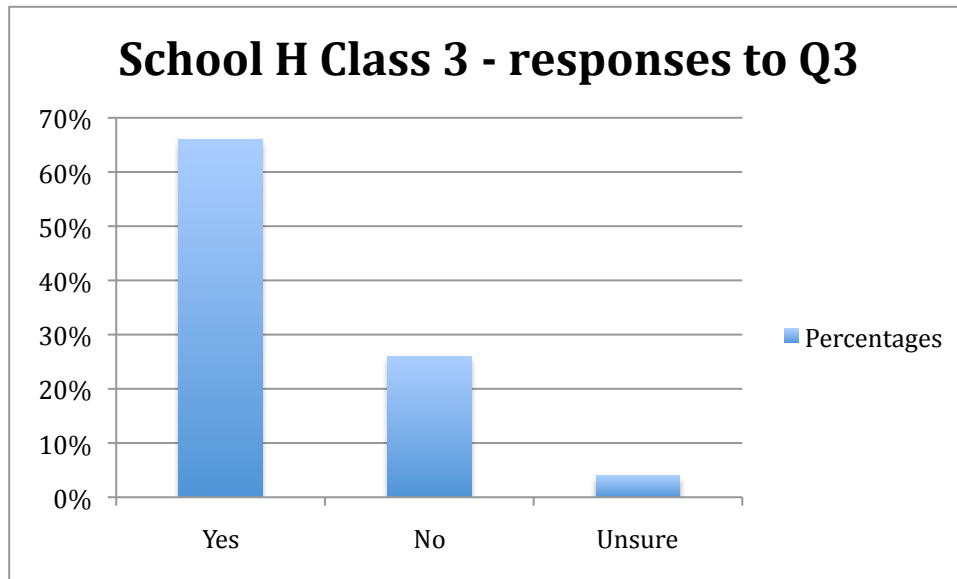
<b>Theme</b>	<b>Number of mentions</b>
Soundwalk	8
Nothing	6
Software problems/difficulties	6

The soundwalk was the most common theme in response to this question at school H, although it was also nearly equally as common in the positive responses to Q1 in class 3 and class 1. As indicated in comments SHC3 and 4 below, having difficulties with the software was also a common theme. Technical problems have arisen in most of the case studies and these types of frustrations often appeared to be underlying some negative responses.

**Table 4-87 School H Class 3 sample responses Q2**

SHC3	<i>I didn't really like doing it on the computer because it went wrong.</i>
SHC4	<i>I didn't like going on audacity because it was hard to change the effects.</i>

**Q3 Do you think the listening practice helped you to create your sound stories?**



**Figure 4-40 School H Class 3 Q3 responses**

Eighteen answered positively to this, seven negatively, one unsure and one left it blank. Given that the soundwalk featured as a prominent theme in response to Q2 it is interesting that 66% of the class felt the listening practice helped in the creative work. However, eight of the class mentioned the soundwalk in response to Q2 and that number also answered negatively or were unsure for Q3.

**Table 4-88 School H Class 3 common themes positive responses Q3**

<b>School H Class 3 – common themes in positive responses to Q3</b>	
<b>Theme</b>	<b>Number of mentions</b>
Raised awareness/helped to concentrate on sounds	10
Helped to think of ideas	5

These were the same themes that emerged in other classes and the exploratory and creative benefits of the listening practice were evident in a number of the answers, as shown in comments SHC 5, 6, 7 and 8 in Table 4.89.

**Table 4-89 School H Class 3 sample positive response Q3**

<i>SHC5</i>	<i>Because it helped me take the time listen to and discover new sounds</i>
<i>SHC6</i>	<i>Yes, because we could listen and it helped produce the sound.</i>
<i>SHC7</i>	<i>Yes because it gives you ideas for making your sounds.</i>
<i>SHC8</i>	<i>Because all the sounds got your imagination going</i>
<i>SHC9</i>	<i>Because you could hear the little thing not just the louder noises.</i>
<i>SHC10</i>	<i>Because it helped me hear quiet stuff</i>
<i>SHC11</i>	<i>Yes, because we paid more attention to all of the sounds around us.</i>

**Table 4-90 School H Class 3 negative themes Q3**

<b>Theme</b>	<b>Number of mentions</b>
Hear sounds all the time, already do it	2
Didn't need it	1
Hard/difficult	1
Boring	1

As can be seen in Table 4.90 no strong common theme emerged in these answers, as again the numbers were very low. However, these explanations were all themes for the other classes in school H.

#### Q4 Would you like to make a sound story again in the future?

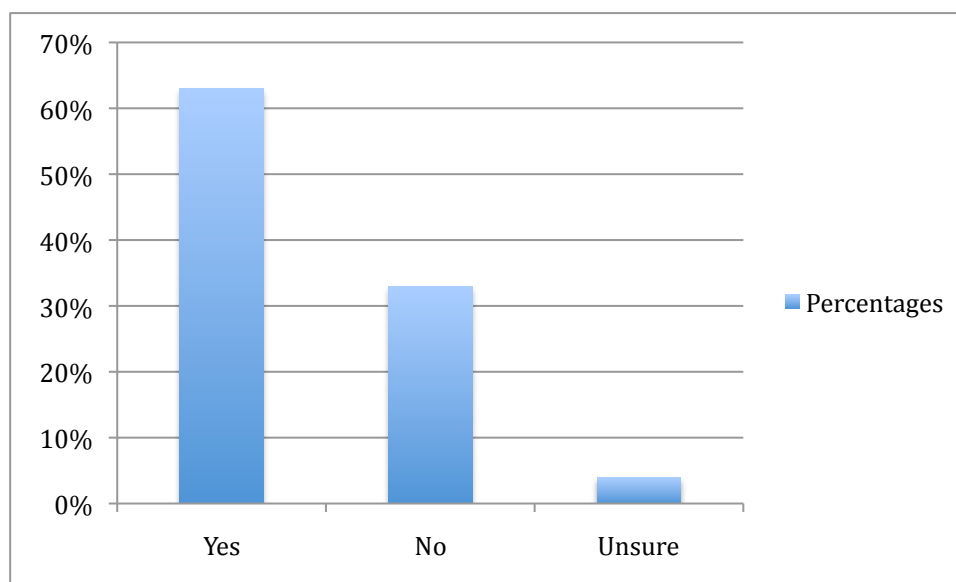


Figure 4-41 School H Class 3 Q4 responses

Seventeen answered positively to this, nine answered negatively and one said 'don't know'. Despite this class having the most behavioural problems they still answered quite positively overall.

Figure 4-42 School H Class 3 positive themes Q4

Theme	Number of mentions
Fun	10
Making compositions/music	4
Manipulating/changing sounds	3

The same common themes emerged again and, as argued previously, these could all be included under a general theme of finding creative activities with sounds

engaging. The link with music was evident in some of the responses (see comments SHC13 and 14 below) and was mentioned more than in most previous schools, which might have been related to the workshops being part of a music lesson.

**Table 4-91 School H Class 3 sample positive responses Q4**

<i>SHC12</i>	<i>Because it was fun making the compositions on the laptop</i>
<i>SHC13</i>	<i>Because it was fun and cool when you can make your own sounds and music!</i>
<i>SHC14</i>	<i>I would do it again because I enjoyed making ordinary sounds into music.</i>
<i>SHC15</i>	<i>Because I could make it a sound story about something I like.</i>
<i>SHC16</i>	<i>Because you edit lots of sounds and explore with them.</i>
<i>SHC17</i>	<i>Because I liked importing sounds into audacity and make it echo and turning the sound up and down.</i>

**Table 4-92 School H Class 3 negative themes Q4**

<b>Theme</b>	<b>Number of mentions</b>
Boring/didn't like	4
Rather do other things	3
Hard/difficult	2

Similar common themes emerged in the negative responses as with previous groups and as previously some of these were complex and demonstrated mixed feelings as shown in comments SHC19 and 21 in Table 4.93.

**Table 4-93 School H Class 3 sample negative responses Q4**

SHC18	<i>No because it's really frustrating</i>
SHC19	<i>No, because I didn't really get the benefit of it, therefore I will do it again, but it was a good experience.</i>
SHC20	<i>Because I like to do new things</i>
SHC21	<i>I'm too busy with fun stuff and it wasn't my favourite. Conclusion: I liked most of it</i>
SHC22	<i>No because it was really really boring.</i>
SHC23	<i>No because I don't really like sounds.</i>

### **Teacher Feedback**

The same teacher was present at every workshop for all the three groups and his contribution was very valuable. The full feedback that the teacher provided in writing after the workshops were completed is provided in Appendix I. It was interesting that despite some of the negative responses in relation to the soundwalk, the teacher felt it had been a valuable experience:

*The children were very interested in listening to the sounds around them. Many children got a lot out of the sound walk. They listened carefully and enjoyed documenting the sounds on a map.*

The suggestions made below in regards to composition were very valuable and influenced the development of the research in phase 3 (see section 4.4), which focused more on how best to facilitate the children using their listening skills to structure their pieces.

*All children worked well with Audacity and enjoyed manipulating sounds. They all found the idea of different sounds together in a composition challenging. They perhaps needed some discussion on the form of composition and build their own visual map of dynamics/ tension / ideas first. They could use this to add sounds to make a more structured composition.*

## School H responses overall

This section includes overall figures for responses to Q4 and Q3 across all three classes at school H.

### Q4 Would you like to make a sound story again in the future?

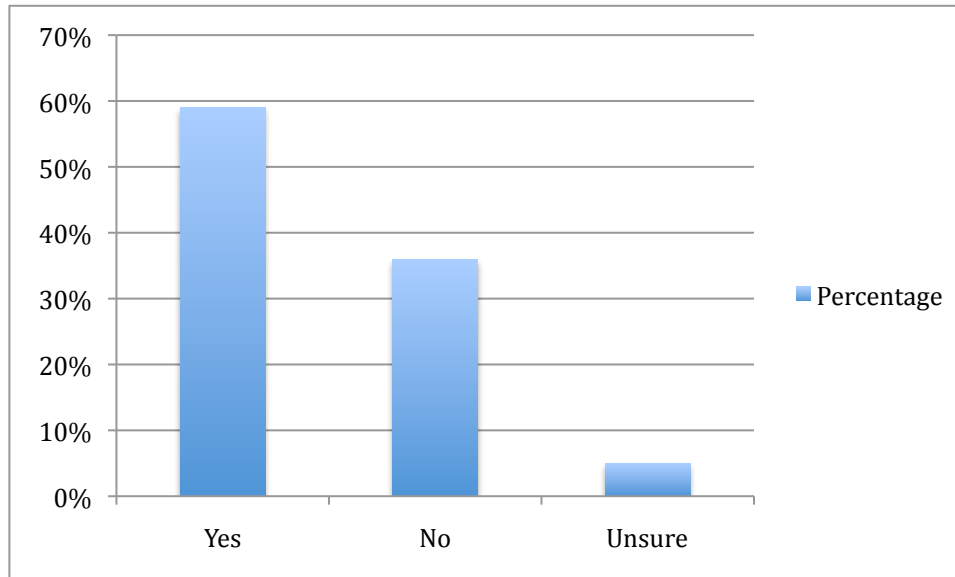


Figure 4-43 School H overall responses Q4

Out of eighty pupils, forty-seven answered positively and twenty-nine negatively with four unsure. While this is a lower number of positive responses than in any other school it is still a clear majority.

Table 4-94 School H most common positive themes (Q1 and Q4)

Theme	Number of mentions
Fun	32
Using effects/ changing sounds	30
Making compositions/music	17
Using ICT/Audacity	16
Listening	15
Introduced to something new/unusual	10
Recording	9

These were all common themes in previous schools apart from the theme of experiencing something new, which was only a significant theme in school H. Despite the soundwalk featuring commonly in negative responses, the listening practice was also a significant theme in positive responses. The view of the listening exercises appeared to be very mixed in school H where the children appeared to have tendency to be easily distracted, which was remarked on by the teacher. This again reflects the complexity involved in interpreting the children's responses as other contextual issues such as whether the group had done PE in the previous lesson seemed to influence engagement with the soundwalk. However, the three most significant themes are predominantly connected to creativity (as it could be argued is using ICT), which supports the findings in the previous case studies.

**Table 4-95 School H common negative themes overall (Q2 and Q4)**

<b>Theme</b>	<b>Number of mentions</b>
Soundwalk	26
Nothing	25
Boring/didn't like	10
Hard/too many difficulties with software etc.	12
Already done it would rather do other things	6

These were all themes in other schools but the soundwalk (as discussed above) featured more prominently in negative responses than in any other previous case study.



### Q3 Do you think the listening practice helped you to create your sound stories?

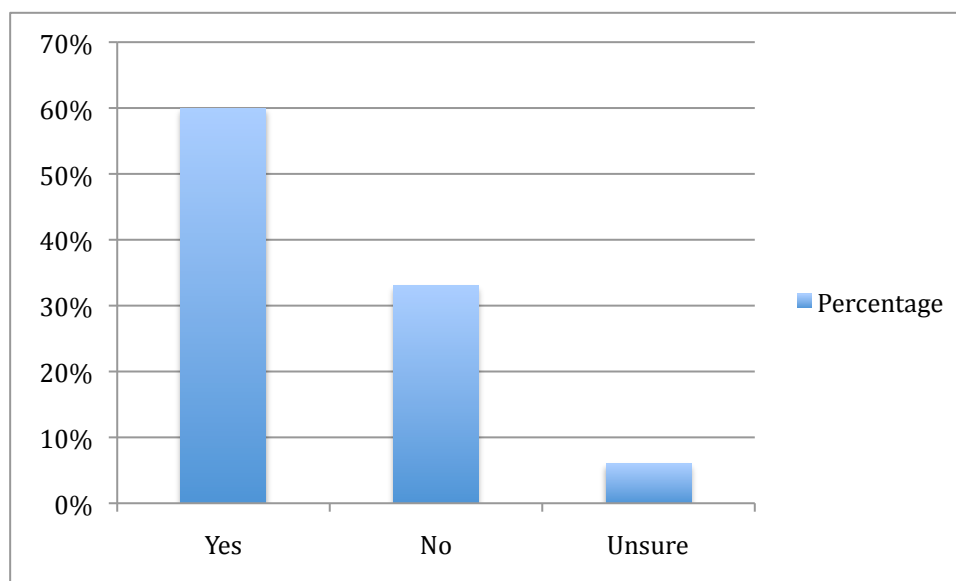


Figure 4-44 School H overall responses to Q3

Despite some of the negative responses to the soundwalk, forty-eight of the children answered positively to Q3, twenty-six negatively and five were unsure. The same main two themes emerged in positive responses to Q3 at school G, which were that the listening practice helped to raise their sonic awareness and to think of ideas to improve their work.

#### Successes

- The teacher was very committed and confident meaning he was able to take a much greater role than teachers in any previous case study.
- Some of the compositional work at School H was advanced and innovative and the children had a high level of ICT literacy.
- The sound installation was an interesting extra inclusion and helped to further inspire and engage the children.

### **Difficulties**

- Due to timetabling, the sessions did not happen each week and were spread out over a whole term rather than half a term. This meant only one of the three groups completed seven workshops.
- Despite the listening practice figuring in positive responses it also featured as a significant theme in the negative responses, more so than in any other school.
- The questionnaires were not always completed in silence and despite requests for quiet there was more discussion about their answers than in school G.

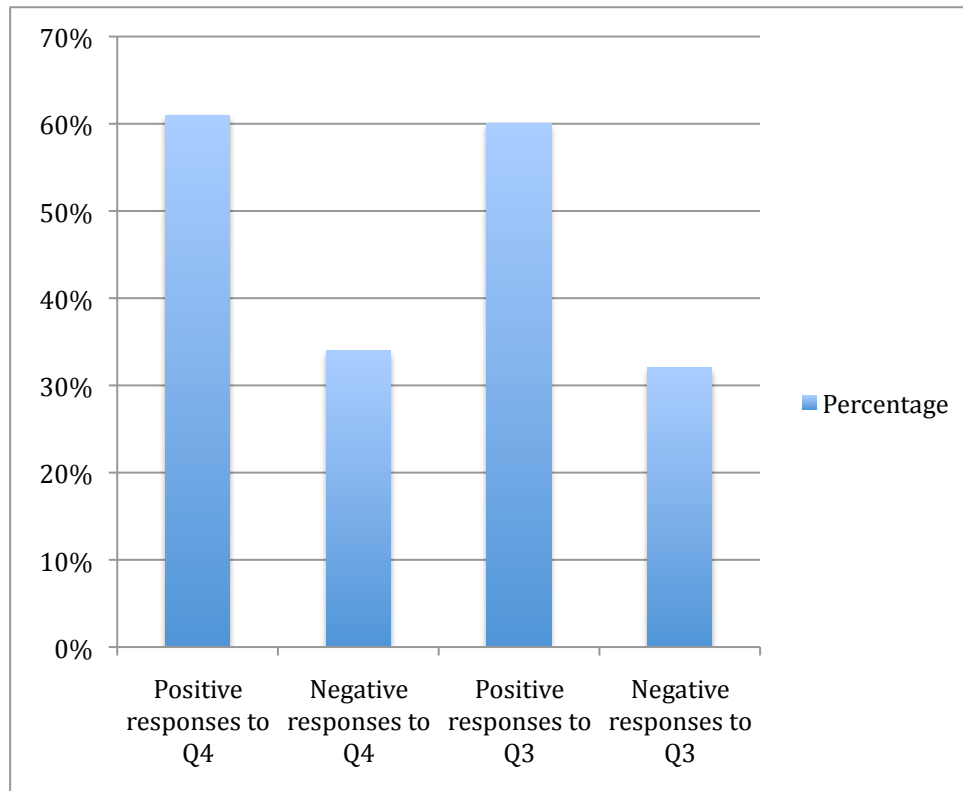
### **Key themes**

- The same main themes emerged in positive responses as in previous case studies. However, there were differences such as the theme of being introduced to something new, which was particularly highlighted in this school. This is interesting as novelty plays a particular role in whether something is intrinsically motivating.
- Observations as well as some of the responses indicated how much the children in school H valued having creative autonomy over their work.
- Overall, many of the children did not seem that interested in developing themes or narratives and rather focused on sonic experimentation.
- 59% is the lowest number of positive responses to Q4 in any of the case studies and it is difficult to determine how much influence the timetabling and its effect on momentum had on this.

#### 4.3.4 Summary, evaluation and areas for investigation in phase 3

Below is a summary of the key findings from phase 2:

- The quality of the work produced in phase 2 and the progress made by the children supports the decision to focus on older children within KS2 in phase 2. It also illustrates the value of constructivist learning as the pupils independently explored the software with more confidence than in phase 1.
- 61% of children answered positively to Q4 in phase 2 (see Figure 4.45) compared with 82% in phase 1. Creativity was the main theme in positive responses in both phases. This reflects the role of creativity in play and exploratory learning, which were important parts of the compositional process and are intrinsically motivating activities, as discussed in section 2.2.3. Such activities are also central to constructivist learning. This role of creativity in engagement with sbm was one of the original contributions of this research (see section 5.3).
- These results therefore suggest that engagement will decrease with age in KS2 as phase 2 focused on older children. Additionally, the school (school F) with the lowest level of positive responses to Q4 in phase 1 (60%) was the one case study with Year 6 children in that phase. This apparent influence of age on engagement with sbm was also an original contribution of the research.
- Listening practice - 60% overall at school H said the listening practice helped them with their compositions (in response to Q3), which is the same as at school G (giving 60% overall for this in Phase 2, see Figure 4.45) but lower than the schools in phase 1 of the research (89%). However, despite the same proportion answering positively to Q3 in both schools, it is interesting to note the different perceptions of the soundwalk, which was relatively popular at school G but was received negatively by some in school H with 33% overall mentioning it in response to Q2 (a higher proportion than in any other case study).



**Figure 4-45 Overall phase 2 responses to Q4 and Q3**

### **Differences between School G and School H**

There were significant differences in sample size between these two groups meaning that a direct comparison between the results would be misleading. School H included three classes of approximately ninety children in total while school G involved a single class of twenty two children. However, some interesting differences emerged in the themes that arose in each school.

- Engagement levels - the response to Q4 appeared more positive in school G (70% - although of the much smaller sample size). This is also supported by the teacher feedback.
- Lesson length - the lessons were often effectively 50 minutes in school H, which is at least 30 minutes less than at school G.

- Timetabling – as discussed in the previous section not all the classes completed seven workshops in school H. The proportion of positive responses was highest (65%) in the class that completed all seven.
- Music lesson - the sessions were part of music lessons at school H rather than organised by a form tutor as at school G.
- Behaviour – the children were more talkative and easily distracted in school H. This was typified by attitudes to completing the questionnaires, which often involved discussion and contrasted with school G where they were completed in silence. This might explain why there seem to be more similarities between the answers given by the children at school H.
- Socio-economic – school G is situated in a more economically deprived area.

### **Evaluation - the influence of novelty on motivation**

A significant difference between schools G and H is that school H provides more opportunities for music than school G and at school H the workshops were part of a music lesson. The only other school where this was the case is school F and school A. School A involved Year 3 and 4 children who had some difficulties learning the software. However, school H and school F had high levels of ICT literacy and are the schools where positive responses to Q4 have been lowest (it was 60% at school F and 59% at school H). Additionally, they are the two schools from the wealthiest areas visited in the project, which have some of the best facilities for music and have produced some of the most advanced and creative work. Although a large majority (87%) at school F said they felt the listening practice had helped them to make their compositions (this was 60% at both school H and school G), 27% of them mentioned the listening practice in response to Q2 (What did you not like in the workshops?), which is relatively high compared with the other schools in Phase 1 and close to the number at school H (33%).

At school G where there are less opportunities and facilities for creative music making compared with school F and H, more of the children answered positively to Q4. This suggests that as well as age, expectation and novelty might also play a role in the levels of engagement. This novelty might also be affected by the socio-economic profile of the school, as noted by the recent Warwick commission report (Neelands et al, 2015: 47) children's access to cultural and creative experiences is linked with economic background.

Learning theories suggest a relationship between motivation and novelty. This has been indicated in research by psychologists such as Edward Deci (1975) in relation to the concept of 'intrinsic motivation' (see section 2.2.3), which Ryan and Deci (2000: 70) describe as, 'the inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn'. This suggests that a constructivist approach, which is characterised by exploratory learning, is well placed to create good conditions for intrinsic motivation. This relates closely to some of the answers provided by pupils at school H that express a desire for new experiences or cite learning something new as a reason for engagement. It might also partly explain the lower levels of positive responses to Q4 in schools F and H where the opportunity to be creative with sound was not such a novelty.

Additionally, the main theme in positive responses across the phases has been that it was 'fun'. An activity being novel will often make it fun; familiarity can often trigger boredom but novelty enhances engagement.

According to Pink (2010) there are three types of intrinsic motivation: autonomy, mastery and purpose, and these have a more significant effect on motivation than external controls such as rewards or punishments. This need for autonomy can be seen in the behaviour of children in school H whose answers included references to a need for independence and control over their work, which was also commented on by the teacher. It has also been a theme throughout the research, where it was found that greater creative freedom resulted in greater progress for some students. This is supported by research that suggests that people are more likely to be creative when they are intrinsically motivated (Deci and Ryan, 1985:

66) and restrictions will impair creativity and motivation. The overall theme of creativity has been the most significant in positive responses and the autonomy given to the children in the workshops helped to facilitate this.

### **Narrative or sonic experimentation?**

It is also interesting to note differences in the role of narrative between schools F, G and H. Narrative played a significant role in the work produced by some of the children in school G but the majority of the children in school F and H seemed more interested in focusing on sonic experimentation. This is reflected in the themes in positive answers to Q3 (Do you think the listening practice helped you to create your sound stories?), as shown in the tables below.

**Table 4-96 School G common positive themes Q3**

<b>Theme</b>	<b>Proportion of pupils that mentioned it</b>
Helped with story/theme	25%
Helped improve/ideas	15%
Raised sonic awareness	15%

**Table 4-97 School H common positive themes Q3**

<b>Theme</b>	<b>Proportion of pupils that mentioned it</b>
Raised sonic awareness	30%
Helped improve/ideas	21%

The purpose of narrative had originally been to aid the children in structuring their compositions. This was because the idea of creating a story would be something familiar to them and such creative writing is encouraged by Ofsted (2011). Therefore, narrative was being proposed as an access tool for structuring a sound-based composition. However, in phase 2, as indicated in the tables above, the listening practice aiding the development of narratives was only a significant theme in the responses given at school G. In school H sonic awareness was seen as

the more significant benefit from the listening practice, which could have been a reflection of those children's previous musical experience.

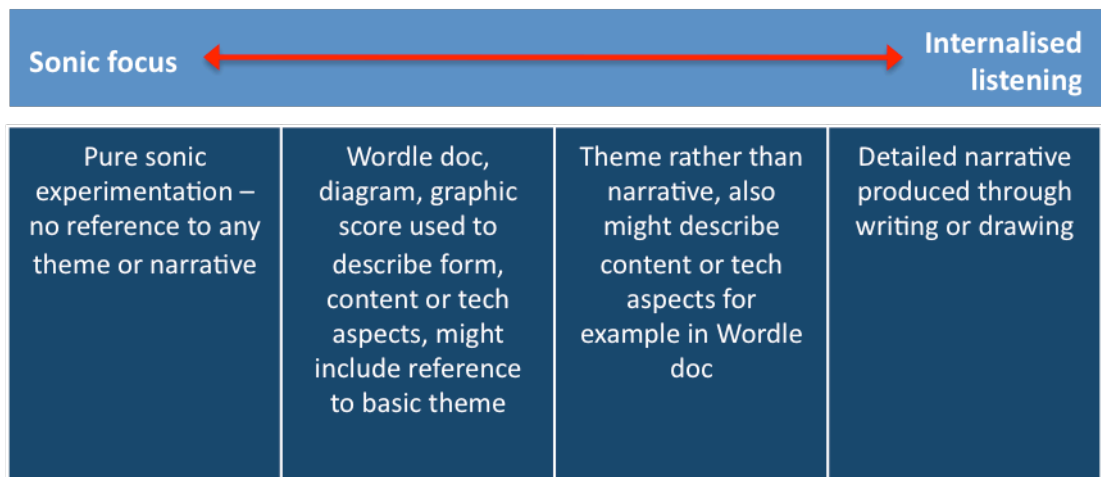
This, along with the data from phase 1, suggested that more data would be needed to investigate further children's approach to creating their compositions, whether that might involve using a narrative or just experimenting with sounds. Such differences in approaches suggested that there might be a number of different listening behaviours (to borrow Delalande's [1998] term discussed in section 2.5.1) used by children depending on their abilities, interests and experience. Phase 3 of the research was launched to collect data to investigate this further.

## **4.4 Phase 3 – Investigating the HL Scale**

### **4.4.1 Introduction**

The heightened listening (HL) scale was developed from the categories that emerged from the data (in line with the grounded theory approach of the research) collected in the first two phases. Although the majority of children said that the listening practice helped them to create their compositions, responses indicated that many pupils preferred to use this practice to support their experimentation with sounds rather than helping to develop a theme or narrative. This suggested that there was a scale of different heightened listening behaviours that related to different compositional activities. A representation of this scale is illustrated in the diagram in Figure 4.46.





**Figure 4-46 The HL scale**

At one end of this scale there are activities such as producing a detailed narrative to support a composition (relating to listening that involves strong imaginative associations or ‘internalised’ listening) while at the other end there is pure sonic experimentation not influenced by any extramusical imaginative associations. Internalised listening here refers to the type of inward listening discussed in 2.5.1 (on page 81), where a listener internalises the initial listening experience and reflects on how this resonates with their memories and past experience from which compositional themes, metaphors or narratives can then be developed. The ends of the scale represent two extremes and in between there are a number of variations that could include creating themes rather than narratives or just creating a graphic score for the piece. Observations suggested that children tended to move around the scale during the creative process and a combination of these different types of activities were engaged in throughout. This movement around the scale is reflected in the diagram shown in Figure 4.46 by the use of the arrows.

In particular the data from phase 2 indicated that children create in different ways according to their abilities, skills and previous musical experience. This was also influenced by a complex range of external factors such as the teacher, the ethos of the school, the socio economic background of the pupils and peer pressure.

As can be seen in the tables in 4.3.4 above, the theme of raised sonic awareness was more significant in answers given by pupils at school H when explaining how they thought the listening practice had helped them to compose, representing a position on the right of the HL scale. School H offered many opportunities to its pupils for making music by employing a specialist music teacher and was situated in an affluent area with few pupils entitled to free school meals. A significant number of the pieces included elements more closely associated with conventional music such as regular rhythms and pitched material. This was similar to school F, which employed a specialist music teacher and was the only private school visited.

However, the most significant theme at school G (which was in an economically deprived area and did not employ a music teacher) in these responses was that the listening practice helped with developing a story or theme, which was not a noticeable theme at school H, suggesting a position more on the right of the scale was more common at school G. This is also reflected in the type of written work that some of the pupils produced, such as the detailed narratives from school G in comparison with the Wordle documents produced at school H that just referred to effects and sounds. However, a number of children in both schools moved around the scale. This is illustrated by the worldle documents that mentioned horror themes as well as referring to the sounds and by the compositions at school G for which no narrative was produced.

In order to investigate this further, in phase 3 participants had the option to engage in different activities depending on what type of listening was most natural for them in supporting their compositional practice. One of the difficulties for children when composing is creating structure and form (as remarked on by the teacher in school H). These activities aimed to enable children to use their listening skills to compose sound-based pieces using strategies that suited their particular skills and abilities.

### **Sample for Phase 3**

The sampling for phase 3 was decided according to the grounded theory methodology based on 'theoretical sampling'. This is a widely practiced sampling technique in grounded theory research as a means of refining ideas that have emerged from data by examining the 'ideas through further empirical inquiry' (Charmaz, 2014: 199). The initial sampling in the first phase had been much broader taking in participants from across Key Stage 2, which was narrowed to Year 5 and 6 in phase 2 due to the data that had emerged in phase 1. In terms of theoretical sampling, sampling for phase 3 was decided upon in order to explicate the theory of the HL scale. To examine in more detail how children use their heightened awareness of sound as a tool for creating compositions, it was decided that a small sample of five children who had already taken part in the main set of workshops would provide the most useful data.

The children who took part in phase 3 were from school G and were selected by the teacher based on levels of engagement and ability demonstrated in phase 2. Although the data had suggested that some of the children in school G tended towards producing narratives for their sound compositions, many of them had also spent much time experimenting with the sounds. Additionally, it was not always clear for those who had produced narratives how much these had determined the composition structure. Therefore, phase 3 provided an opportunity to examine this further.

### **Workshops**

Four sessions were organised in which the children created new compositions using sounds from the sound bank. As part of this the children created plans that provided structures for their compositions, these plans could be connected to a story or be more like a simple score that just related to the sounds and effects. They were encouraged to think about the overall structure of their compositions and to consider how the sounds could fit together as a cohesive whole. Devising the plans provided a tool to help them develop their structures. The finished work was put on the class Soundcloud page and there was also a school concert where

the final pieces were played to the rest of the class, who then asked questions and gave feedback.

#### **4.4.2 Phase 3 analysis**

##### **Analysis of exercise 1**

The workshops began with a listening exercise, which was designed to encourage the pupils to further develop their listening practice and to start collecting data in relation to the HL scale. A sound (water lapping at the edge of a lake with a section in the middle which was slowed down using the change speed effect in Audacity) was prepared for use in the listening exercise. The pupils were asked to load the sound into Audacity and listen to it on their headphones. They were then asked to describe the sound in terms of how it made them feel or its sonic characteristics in writing on paper. Interestingly, most of them told a story in relation to the sound and these stories all involved going under water, which was how they all interpreted the slowed down section.

One story described the feeling of going down a water slide and falling underwater, as shown below in the description by Student D:

*I think that if the sound was in a film somebody would be going in a swimming pool, putting in their head and then getting back out.*

It is also interesting that there is a reference to cinema in this description, which seems to be a common reference point for many children's interpretations of sounds. The other four descriptions illustrated complex responses that moved between contrasting emotions. They described the sound as 'calm' or 'soothing' but also associated it with feeling frightened or being in danger, such as in this example, by student B:

*First relaxed, but then like a shark was coming towards you. It felt frightening. Then like he swam away and it was all calm, safe.*

This example, by student A, was based completely on a narrative:

*The boat capsized the man looks around determined to find his wife. Suddenly he gets dragged down what has got him?... Distant screams echo around him as he drowns almost in disbelief.*

This was followed by three descriptive words that contrasted with the main narrative and demonstrated the complex responses that arose in their interpretation of the sound:

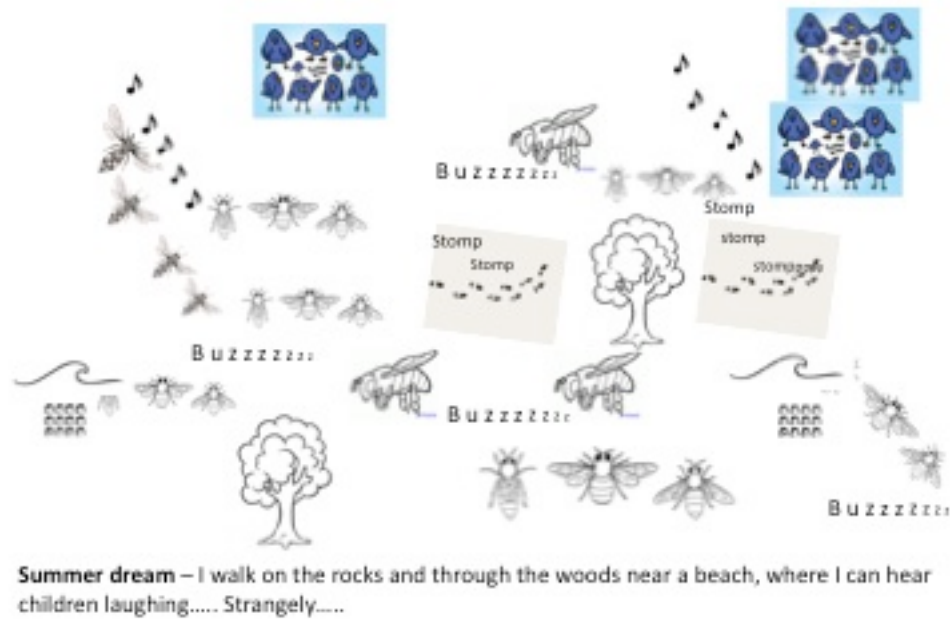
*Smooth, calm, relaxed*

It might be that they all interpreted the familiar water sound as calm and the slowed section, which they felt was like going underwater, as suggesting something more frightening. Only one of them talked about the characteristics of the sound, mentioning that it started high and then 'went deeper'. One of them also did a rough simple sketch of their story.

This listening/writing exercise produced some imaginative responses, which suggested that for some of these children there is a bias towards narrative in terms of the HL scale, however the composition plans provided more data for this question.

### **Analysis of plans and compositions**

In order to help the children to develop compositional structures they were asked to create plans similar to musical scores for their pieces. It was explained that scores can be created in many forms that might use text, drawings or symbols. A prepared example (see Figure 4.47) that included pictures, symbols and text was shown to them and they then listened to the example composition (made in Audacity using sounds from the sound bank) that it was created for.



**Figure 4-47 Example composition plan**

Following this they were asked to produce their own plans for their pieces using a timeline with drawings, writing or both. It was explained that it did not have to be a story; it could just represent the sounds in any way they wished to help them with the structure. Each pupil was given a large piece of paper, some coloured pens and a ruler with which to create their plans.

The composition work itself was hindered by an error message that kept appearing on the laptops, but despite this the children managed to produce some interesting work (all five pieces are included on the DVD in the phase 3 folder). It was interesting that the pieces influenced each other by using comparable sounds and effects. Each of them used a piano string sound as well as a voice saying 'wow', which showed how the theme of voice fascination has continued in this phase. Additionally, each of them used reverse and time stretch, while most of them changed the speed of some the sounds. Listening to the pieces it does seem evident that consideration has been given to structure (demonstrating simple taxonomic listening as in Delalande's [1998] term discussed in section 2.5.1), which seem

connected to the themes or sonically related rather than simply being manipulations that have been placed together without consideration or due to any process.

The children were asked to record short descriptions or 'vox pops' at the end of the workshops to explain a little more about their compositions. Their plans were used as a basis for the interviews, which helped them to give a level of detail that they would have struggled to achieve without that support. It can also be beneficial for children to learn to develop language for talking about sounds and their compositions (see Auker, 1991; Burnard, 2006), as it helps them to clarify their own ideas and the process they worked through, which could be useful for developing future ideas. Below are analyses of each pupil's work and their comments on it.

### **Student A**

Student A drew abstract shapes on the paper that represented the sounds and effects without reference to their source (which he confirmed in his interview). He later added in some text and a theme in reference to mermaids and the sea, but his plan emphasised the sound qualities most noticeably out of all the children (see Figure 4.48). It is interesting that this pupil is the only one who plays an instrument and had previously mentioned guitar tablature in relation to scores, which might in part explain his approach being closer to an abstract musical score. This relates to the stronger tendency towards the sonic experimentation end of the HL scale observed in school F and H, where more of the children had experience of creating music or playing instruments.

As can be seen in Figure 4.48, he drew lines representing delay effects and sustained stretched sounds that increased and decreased in amplitude. Some of the lines represent waves as he included a recording of the sea in his piece (see P3T1 on the DVD).

The piece by student A is possibly the most accomplished. He contrasts the piano string sound (which is also reversed and delayed for variation) with stretched and

edited versions, which build to a slow climax and are layered with the stretched sound of the kettle. Mixed in the background throughout can be heard the sound of waves. He was the only one in the group to use this sound, which gives it a different quality to the other pieces. The piece is based around the slow build of the stretched sounds reaching crescendos and finally fading out. It ends with the voice saying 'wow', which feels quite out of place but it might be that the intention was to introduce some humour and, according to his vox pop, 'a surprise'. Apart from the use of the sea sound, which relates to a theme of 'the magic of the sea', the piece is not obviously connected to any narrative. This is reinforced by his plan, which uses abstract shapes representing the sonic characteristics of his music.

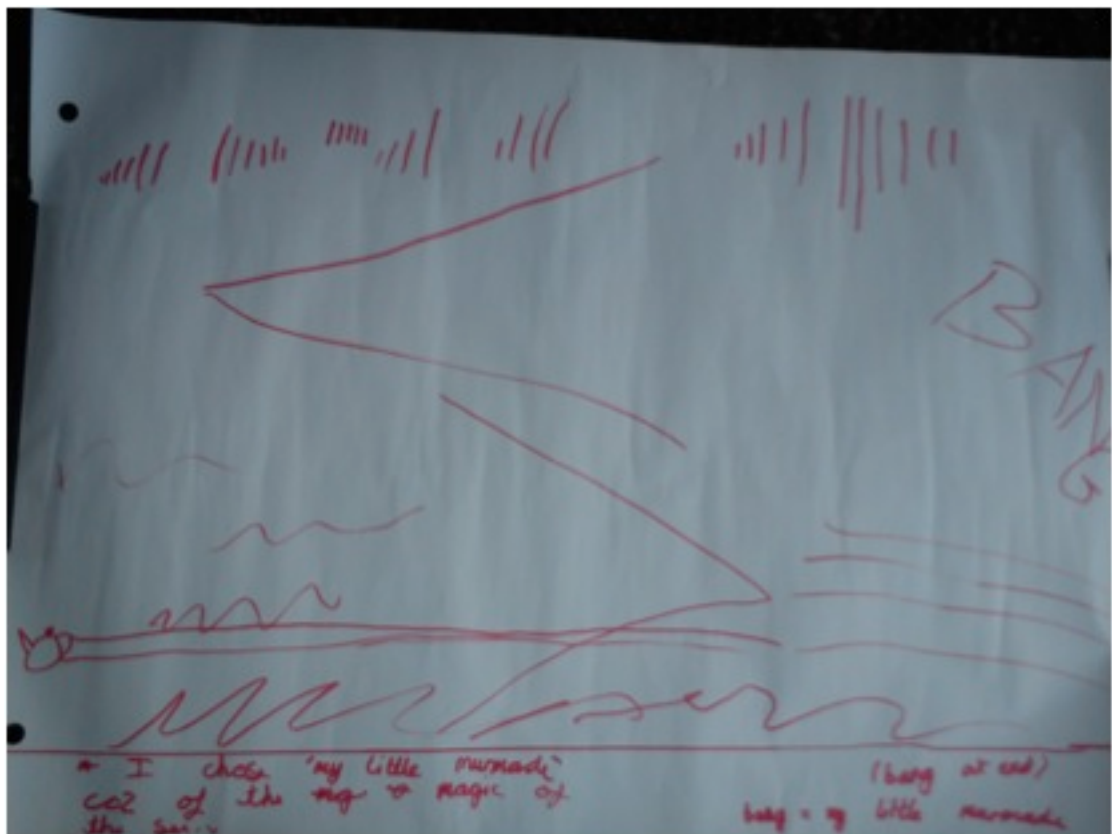


Figure 4-48 Student A plan

Text – 'I chose "my little mermaid" because of the magic of the sea'

### Student B

The piece by student B (P3T2 on the DVD) used a recording of piano strings and a cluster chord that were slowed down, as well as manipulated laughter and



bouncing balls (see Figure 4.49). She drew pictures of piano notes, bouncing balls and children laughing, so her score was very representative. She did originally have an idea about a theme in connection with a plane taking off but decided in the end to focus on the sequence of sounds in her plan. Therefore, it seemed that in deciding how to structure her piece she moved along the scale from the narrative end towards sonic experimentation. However, when she came to do the vox pop she said the theme of her piece was about a plane taking off. It might be that she was worried about what to say in the vox pop and decided she should mention a story of some sort because some of the other pupils had. This demonstrates the complexities of classroom situations and how children's responses can be influenced by their peers. Complexity is characterised by the influence of such variables, which can overlap in a complex web of multiple factors.

The piece by student B has the least coherence in terms of its structure. This is reinforced by her plan, which contains the least detail, as well as her vox pop in which the mention of a theme seemed to be more of an afterthought than a guiding structural mechanism.

It does seem evident that for these first two pieces the two pupils occasionally moved back along the scale towards narrative at points in the process when they considered themes, but how much this influenced their structures is hard to establish.

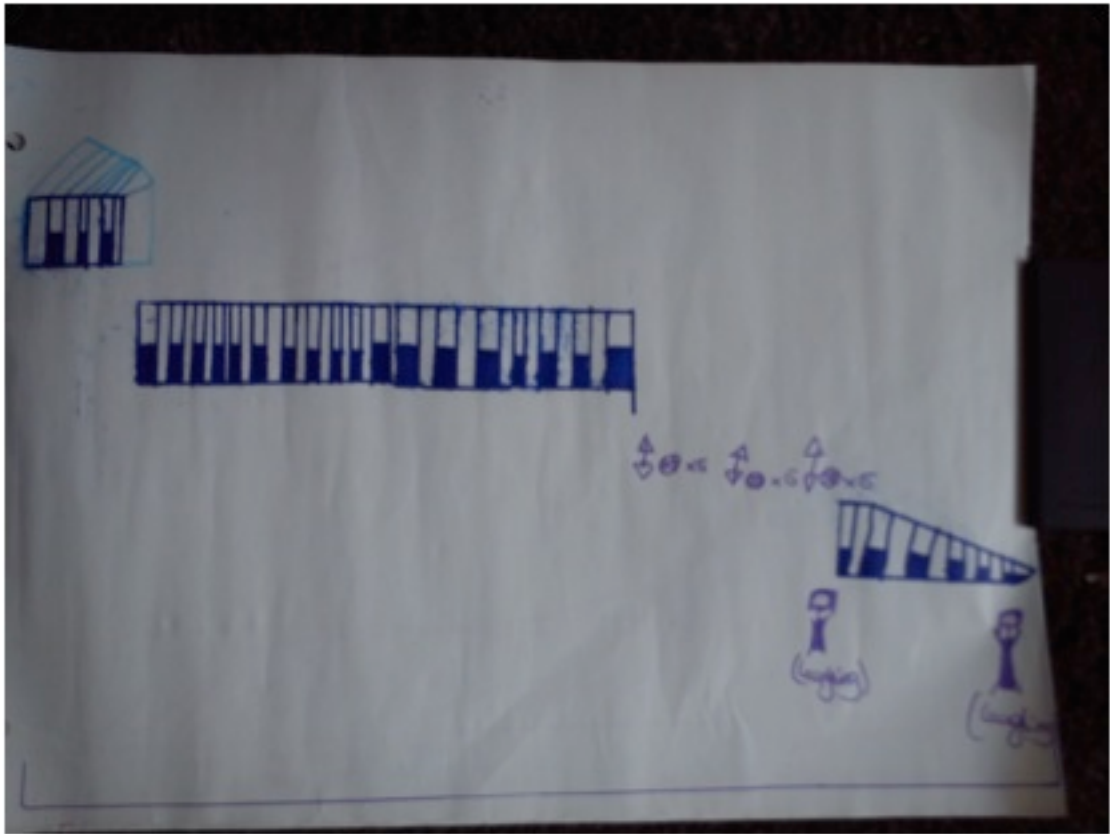


Figure 4-49 Student B plan

### Student C

This was a plan for a murder story in which the drawings were mainly representative of the sounds, such as a drawing of a piano, piano strings, footsteps ('stomp, stomp') and paper (see Figure 4.50 and P3T3 on the DVD). The narrative was explained briefly at the bottom of the score in writing but in the interview student C gave a more detailed description of his story about a mass murderer.

He also explained that the lines on his plan next to the piano strings represented them being 'deepened and stretched out'. So most of the drawing on his plan refers to the sounds themselves rather than the narrative and he uses these symbols to represent some of the effects. It is only through the writing at the bottom and his explanation in the vox pop that the narrative is fully explained. This was the most gruesome narrative produced but shows again how common the connection was between narratives and horror.

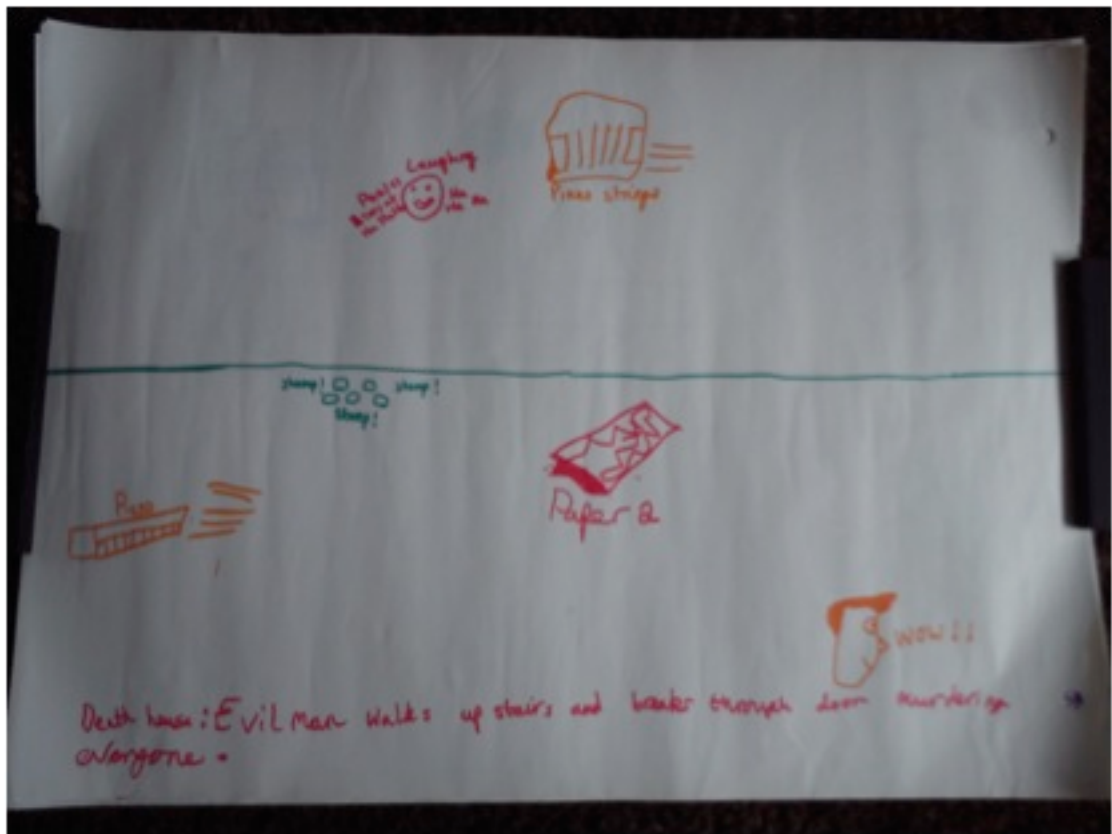


Figure 4-50 Student C plan

Text – *'Death house: Evil man walks upstairs and breaks through door murders everyone.'*

#### **Student D**

The plan by Student D (Figure 4.51 and P3T4 on the DVD), while still including symbols with reference to the sounds (such as piano notes), had more drawings that related directly to the narrative, such as a drawing of a space ship, a character in the story and a landslide. The narrative was also explained by some writing at the bottom of the plan.

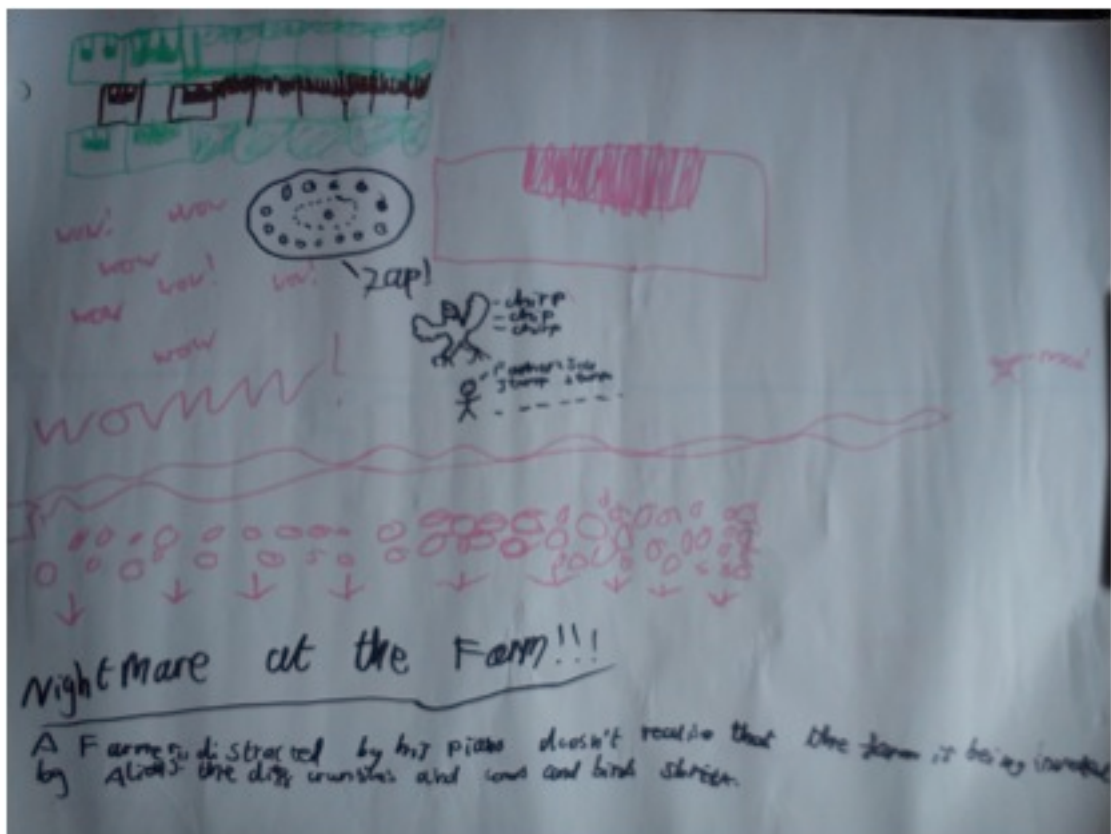


Figure 4-51 Student D plan

Text – ‘*Nightmare at the Farm!!! – A Farmer is distracted by his piano, doesn’t realize that the farm is being invaded by aliens. The cliff crumbles and cows and birds shriek.*’

Student D explained that his narrative involved Martians landing at a farm and causing explosions by shooting lasers. He described how he used a recording of a voice saying ‘wow’ to intentionally create different sounds, such as the sound of a cow and the space ship, by using effects such as time stretch and changing the speed. In this way a mixture of the narrative and sonic experimentation guided him in creating and sequencing the sounds.

Additionally, student D wanted to transform the sound to a point where it was unrecognisable from the source, something that is a common practice among sound-based composers (see discussion on Normandeau in section 2.5.2) although they will often return to the original sound at particular points (Truax, 2002).

However, student D was deliberately trying to transform the sounds in to something else with a new meaning to fit his narrative.

### **Student E**

In contrast to the others student E's diagrams all represented a story based on an imaginative interpretation of the sounds apart from a drawing of a piano (Figure 4.52 and P3T5 on the DVD). Although there was little writing on the plan this piece was closest to the narrative side of the scale as the pupil at times consciously tried to shape the sounds to fit the narrative. However, her original idea for the narrative was triggered by listening to the sounds with effects she had added in Audacity. Therefore, she moved around the scale during the compositional process as the narrative was inspired by the initial sonic experimentation. In her vox pop student E explained that her composition was 'supposed to be scary'; she then explained in more detail about the narrative:

*the piano strings at the start like someone in the dark playing it. ...  
but it's like a mystery 'who killed Lucy?' You have her dead on the  
road and then you have a truck and a wolf and then at the end you  
have a 'shhh'.*

The vox pop given by this student is mainly concerned with the narrative and explains it in more detail than the other students. She explains how she created a growl sound by using the change speed effect and, as with student D, she transformed the sound to the point of making it unrecognisable.



**Figure 4-52 Student E plan**

*Text – 'Who killed Lucy?'*

The short piece by student E (P3T5) appears clearly related to the narrative shown in her plan but is possibly the least technically accomplished as it uses fewer sounds and effects. By slowing down the sounds of laughter and footsteps, which are layered together, she was reminded of walking in the woods. Her approach to sequencing and structuring the sounds seems to have been based more on an imaginative interpretation than an interest in their sonic qualities. This appears to have been a common approach in the all the pieces; the theme or narrative is suggested by the initial experimentation, which then influences the development of the piece, although it is clear that this influence is stronger for some than others. Some of the work can be compared to a 'bottom up' (Landy, 2012) approach to composition, which involved guidance from a narrative that was also developed from playing with the sounds or a 'bottom up' approach. The use of a 'bottom up' approach is similar to the compositional approach used by pupils in the project

run by Martin (2015) discussed in section 2.3.2. However, the development of themes or narratives was not something that the pupils engaged in Martin's project.

#### **4.4.3 Summary and evaluation**

The sample was obviously small for this phase of the research so the data cannot be conclusive but it does suggest that children will operate on different parts of the HL scale depending on their experience, skills, interests and abilities. Phase 3 therefore supports the theory of the HL scale, which is one of the original contributions of the HL2 doctoral project (see section 5.3). It is clear that some of the children used narrative to guide and develop their structures whilst some relied more on sonic experimentation and they all to some degree appeared to use different combinations of both. As a comparison, it would be useful for future research (see section 5.5) to conduct similar focused studies in schools where the children have a specialist music teacher, but it was not possible to conduct more workshops in school H or F at this point.

One interesting observation was that student A, who is familiar with guitar tablature, produced the most abstract score. This might suggest that his previous musical experience influenced how he created his plan and therefore his composition, which is supported from some of the data from schools F and H. In the final session of phase 3 the pieces were presented in a concert to the rest of the class that took part in phase 2. All the feedback from the class was largely positive and the teacher commented that she could notice the improvement compared with the previous compositions. Perhaps unsurprisingly, there were lots of cinema and horror references in the comments made by the class, as it seems this is the most obvious point of reference when listening to sound-based pieces for this group. All the pieces were interpreted as having a narrative and when student B did not mention this in her introduction one of the class asked what the theme was for her piece. However, the plans, compositions as well as observations suggest that the children all moved around the HL scale to different degrees. None

of the pupils were positioned at the extremes of the scale; they all either included some reference to a theme or used sonic experimentation to some degree to determine how their narratives would develop. They all had their own approaches, which supports a cognitive pluralist view (discussed in section 2.2.2) that children will learn and create in individual ways depending on their interests, experience and abilities.



## 5 Conclusions

### 5.1 Summary

The research investigated the use of heightened listening as a creative tool to help facilitate Key Stage 2 children's engagement with sbm. This built in particular on the HL project that had investigated the effect of developing heightened listening skills on the appreciation of electroacoustic music for Key Stage 3 children, which was conducted as part of the researchers master's research (see Holland, 2011). The HL2 doctoral project is situated in an interdisciplinary field combining sbm studies with educational research and music technology. This meant the project could be approached from a range of perspectives in order to aid the investigation of the complex and interconnected questions that this thesis is concerned with. The thesis attempts to integrate these different perspectives so as to provide a more holistic picture. As Lyall et al (2011:14) argue, 'good interdisciplinary research is much more than the sum of its parts'. Additionally, the project builds on other research at DMU into sound-based music and education (Landy et al, 2013; Wolf, 2013; Therapontos, 2013). The main research questions for this project are shown below.

- Can heightened listening be used as a creative tool to help facilitate engagement with sound-based music for Key Stage 2 pupils?
- Can heightened listening be used by Key Stage 2 children to explore the imaginative aspects of sounds to help develop themes or narratives that can be used to support compositions?

The literature review chapter first examined the growing area of research relating to sbm and education and discussed both national and international initiatives. The chapter also explored the educational theories (such as constructivism) that underpin the HL2 doctoral project. Additionally, the concept of heightened listening was explored by examining the different approaches to listening in sbm.

Once the context for the research had been established the methodology was explained. The methodology is situated in the interpretive research paradigm common in the social sciences and is influenced by both grounded theory and complexity theory. A case study approach was used to investigate the central research questions that the project aimed to explore. The research consisted of three phases, which, in accordance with grounded theory, were determined by the themes that emerged from the data. Each case study school involved a series of workshops in which pupils learnt heightened listening skills, recorded sounds and created compositions from those sounds. In total thirty-nine workshops were run in phase 1, twenty-five in phase 2 and four in phase 3, meaning that sixty eight workshops were conducted across the whole project with 241 children who completed 172 compositions. The data was collected through questionnaires (in total 221 children were present to complete these), observations, teacher feedback, recordings and the work produced by the children over three phases.

Phase 1 of the research involved an open approach to sampling in accordance with a grounded theory approach and included children from each year in Key Stage 2. Phase 2 of the research involved a narrowing of focus on older age groups and only Year 5 and 6 children participated in this phase. Phase 3 investigated the concept of the heightened listening scale that had emerged from the data in the previous phases. It involved a small group of Year 6 children who had participated in phase 2 and so were familiar with the software and concept of sbm.

Overall, the majority of children (71%) who participated indicated that they would like to make sbm in the future and 70% indicated that the listening practice had helped them to create their compositions. Considering that 'real world' sbm currently has a relatively small audience and was unfamiliar to the participants, these percentages are very high and comparable with some of those achieved in the Intention/Reception project (Weale, 2005; Landy, 2006). This therefore strongly suggests that sbm can be creatively engaging for pupils in KS2 even though it currently rarely features in music education for this age group. Evidence of the high levels of engagement was supported by feedback from teachers who

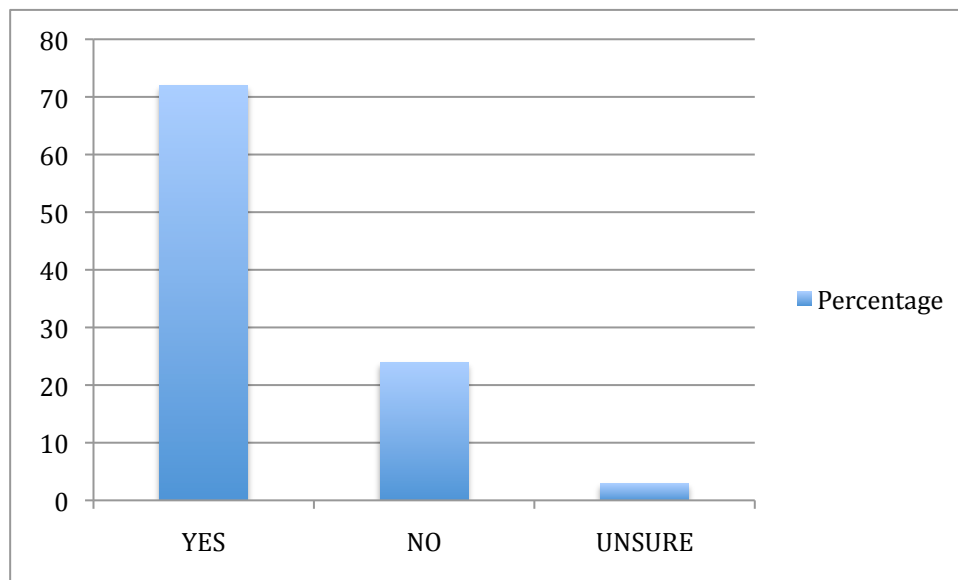
also highlighted the benefits of the listening practice and the potential of sbm in complementing subjects across the curriculum (such as traditional music education, ICT and science).

A number of key themes were identified in the data analysis chapter that related to both positive and negative responses. One clear theme was that creativity was the most important factor in explanations for positive engagement. Additionally, themes emerged from variations in the participant's creative use of the listening practice resulting in the theory of the HL scale.

This chapter will provide an overall evaluation of the key findings building on the discussion and analysis in chapter 4. Additionally, the original contribution to knowledge that the research has made will be outlined. Finally, potential areas of future research arising from the HL2 doctoral project will be identified.

## **5.2 Overall evaluation and key findings**

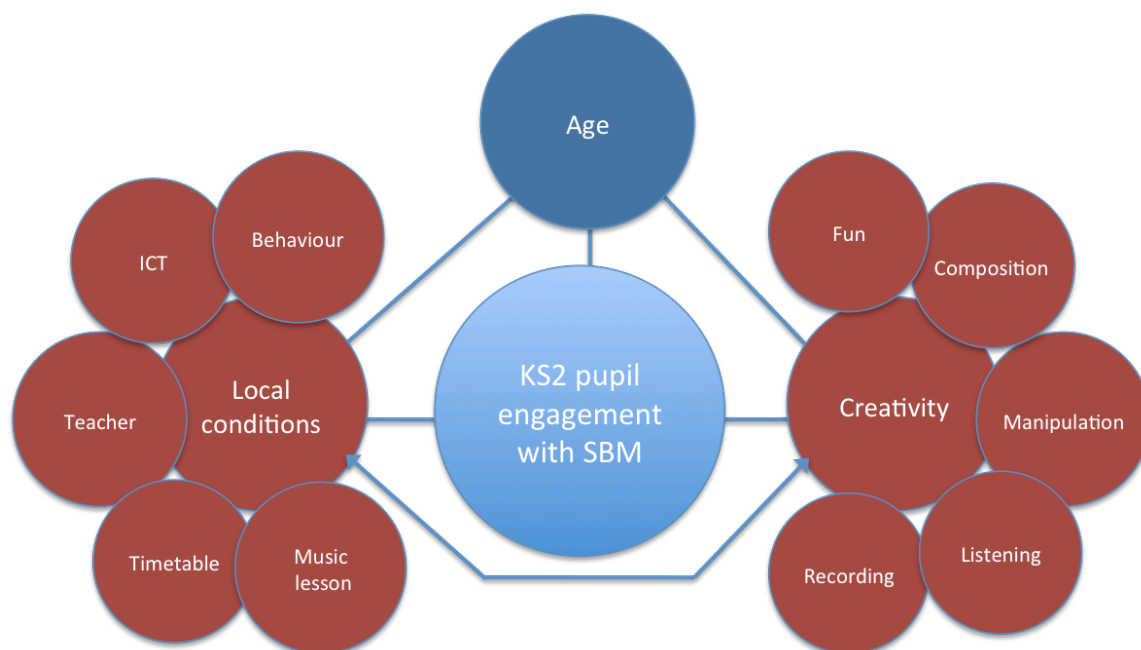
This section will build on the analysis and evaluation that was conducted in Chapter 4. The key themes uncovered in the data through the research process will be identified and discussed. The project was primarily concerned with the children's engagement with sbm through their creative work and Q4 was an important indicator of this. Below in Fig 5.1 is a graph showing the overall responses to this question.



**Figure 5-1 Overall responses to Q4 (Would you like to make a sound story again in the future?)**

As is demonstrated in the graph, a strong majority of the children who took part indicated that they would like to make sbm again in the future. This level of engagement has also been supported in the observations made by the researcher and feedback from the teachers involved in the project. Additionally, it is evident in the quality of work produced by some of the children that suggests a particular level of engagement and commitment.

Analysis of the data has suggested that two main themes (under which a number of significant sub-themes identified in the previous chapter are clustered) arose in the workshops that influenced engagement, which are creativity and local conditions. Overall, engagement also appears to have been influenced by age with lower levels of engagement in the older age groups. This was a factor that was separate from unique local conditions and creative workshop content. These relationships are illustrated in the diagram in Fig 5.2 below:



**Figure 5-2 Relationships between key themes influencing engagement**

The key sub-themes were interconnected and often overlapped and the two main themes also influenced each other. For example, the creative themes of fun, composition, manipulation, listening and recording were closely interwoven with each other, but creativity was also affected by local conditions such as the ICT facilities at each school. Additionally, the factor of age impacted on the main themes. For example, the ability to complete certain sound manipulations and use the microphones was, as expected, influenced by age, as was behaviour.

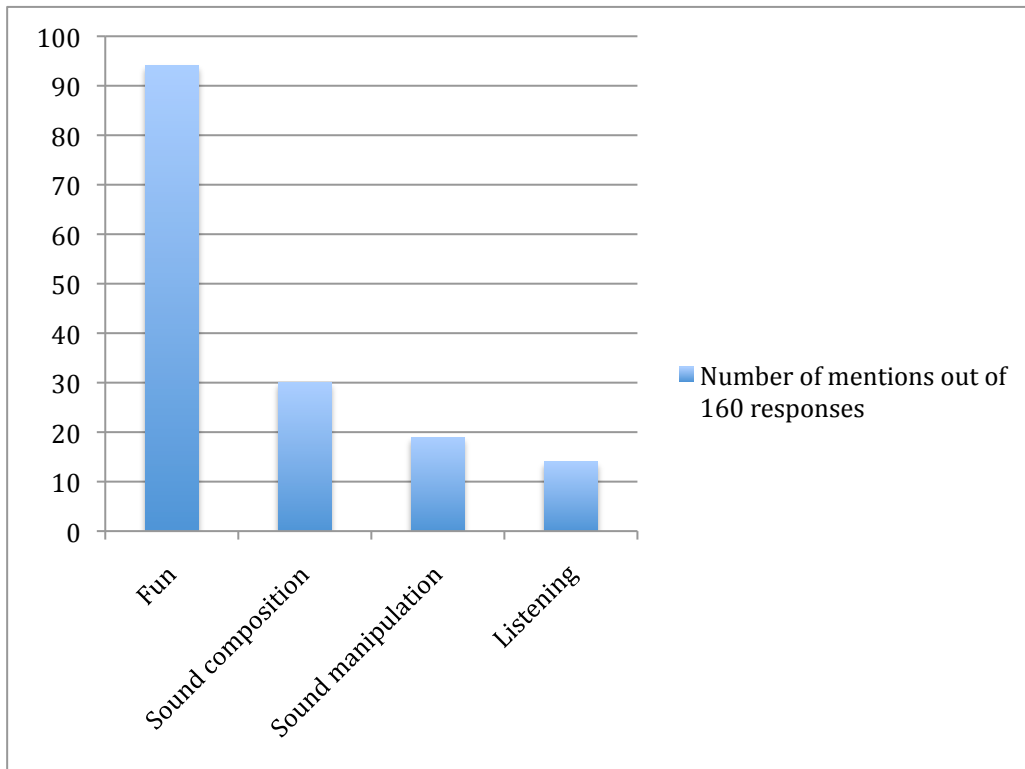
In accordance with a grounded theory methodology, the theory of the HL scale (discussed in section 4.4) has been developed from these key themes. Aspects of the themes can also help to explain some reasons for negative responses and why engagement was lower in phase 2. The following sections will explore this along with the role of the themes in facilitating engagement and their relationship to the concept of the HL scale.

### **5.2.1 Creativity: The key driver of engagement**

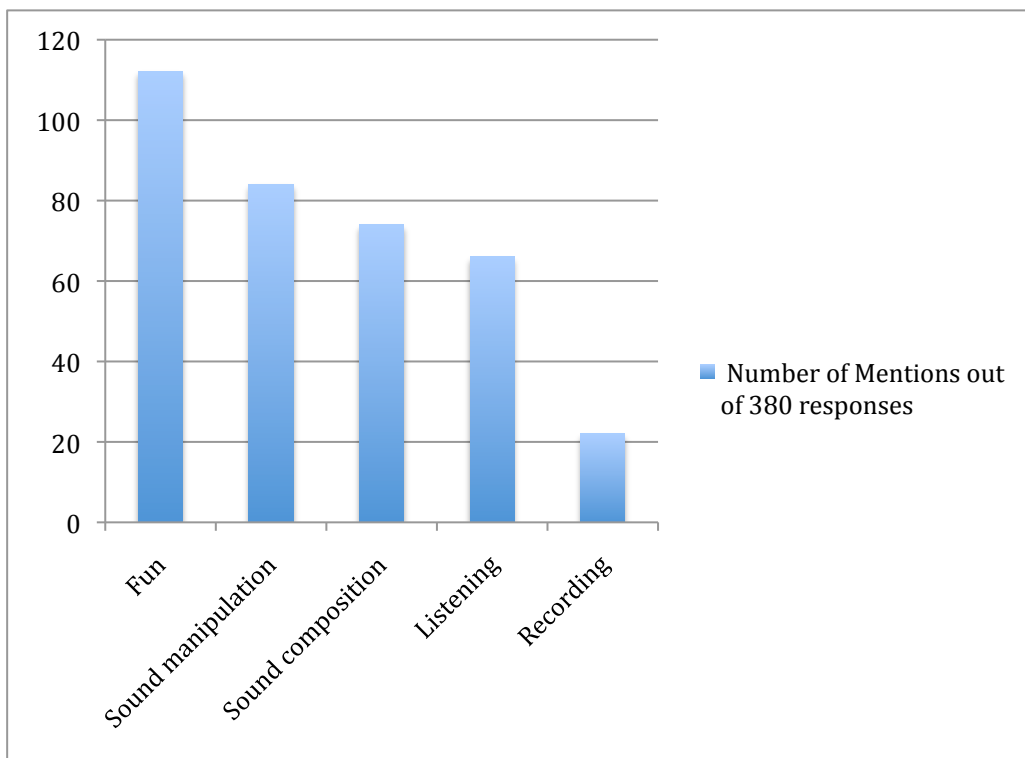
The overall theme that kept arising when pupils were explaining what they enjoyed about the workshops or why they would like to make sbm again, was engagement with creative activity. As discussed in section 2.2.3, there is a close

connection between constructivist learning and creativity. In this context the type of creativity being discussed is one that is 'democratic' (NACCCE, 1999) rather than elitist; it is everyday creativity meaning the type of creativity that exists in everybody (Cropley, 2001:10). For creativity of this kind, what is created might be novel in the mind of the creator but is not so in terms of human history (as in the H-creativity and P-creativity described by Boden [1994: 76] as discussed in section 2.2.3). In the HL2 doctoral project the children clearly enjoyed the opportunity to exercise their individual creativity. It is recognised in positive psychology (Csikszentmihalyi, 2002; Deci and Ryan, 1985), as referred to in section 2.2.3, that creative activity is enjoyable or fun (fun was a very common theme in positive responses in this research) in a way that is intrinsically motivating. Similarly, the responses in the HL2 doctoral project suggest that pupils did not find the activities engaging because they were offered external incentives, but because they found the experience itself 'fun'.

Additionally, as discussed in section 2.2.3, the lack of opportunities for creativity in the UK curriculum has been highlighted since the millennium (NACCCE, 1999; Neelands et al, 2015). Therefore, the pivotal role that creativity played in engagement in the HL2 doctoral project suggests that the benefits of this should be considered across the curriculum. The role of creativity in driving engagement in this research will be examined in this section in connection with the interrelated subthemes (See Fig 5.2 above) that were clustered under this main theme. These subthemes were the key themes in positive responses given in phase 1 and 2 of the project, as demonstrated in Fig 5.3 and 5.4 below.



**Figure 5-3 Common positive themes to Q4 overall (Would you like to make a sound story again in the future?)**



**Figure 5-4 Common positive themes overall for Q2 (What did you like about the workshops?) and Q4 (Would you like to make a sound story again in the future?)**

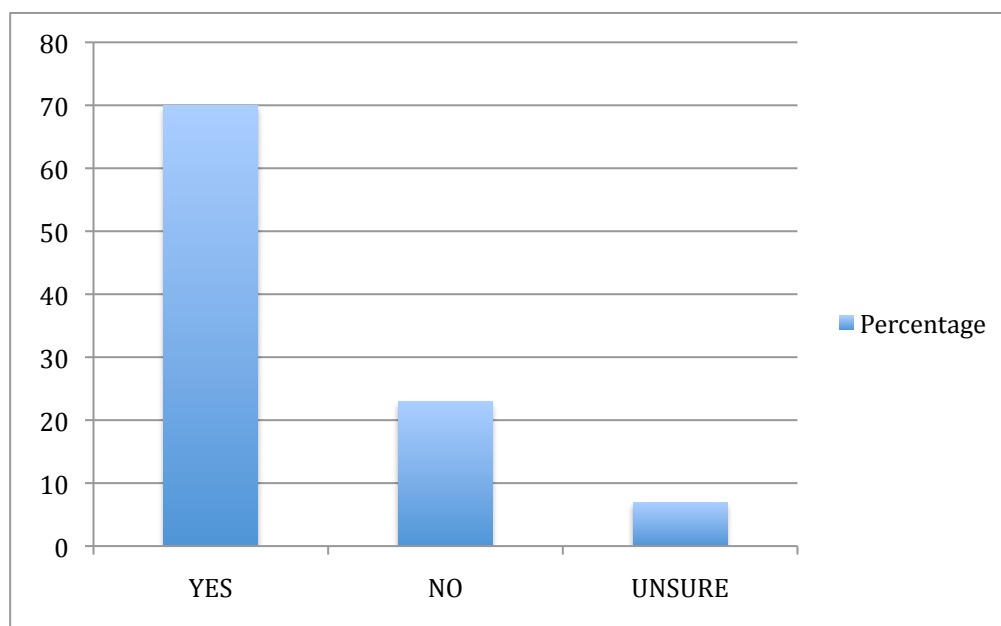
### Why are these themes clustered under creativity?

The theme of fun predominantly arose in explanations for why participants would be interested in making a sound story again (as can be seen in Figure 5.4).

Therefore, there seemed to be a similarity between these answers and those that explicitly mentioned sound manipulation and composition, as they all appear to be expressing an interest in creatively working with sound. Recording involved making creative choices about what to record and creating sound from various objects (such as paper). Although the listening practice was not purely creative, it involved important creative elements as it was used to make decisions about what to record and for developing compositional ideas and narrative themes. The next sections will discuss reasons how these creative aspects of the project might have contributed to engagement.

### The creative role of listening and the HL scale

The link between the listening practice and creativity was highlighted by responses to Q3 as shown in the graph in Figure 5.5 below.



**Figure 5-5 Overall responses to Q3 (Do you think the listening practice helped you to create your sound stories?)**



This indicates that the majority of participants felt that the listening practice did support their compositional work. It is also striking to note the similarity between the proportions shown in this graph to those shown for responses to Q4 in Figure 5.1. This suggests that many who answered positively to Q3 also answered positively to Q4, which is supported by a strong connection between positive answers to Q4 and positive answers to Q3 when examining responses given by individual participants. Therefore, this indicates a link between engagement and recognising the creative value of the listening practice.

Across the case studies positive responses to Q3 revealed two main themes in why the listening practice was helpful in creating their compositions. These were that it helped to:

- Increase aural awareness
- Develop ideas for compositions
  - Sonically (developing sounds through experimentation)
  - Thematically (developing themes or narratives)<sup>1</sup>

It was often evident from the work whether children had used their listening imagination to produce themes or narratives or whether they were more interested in experimenting with the sound. This was particularly interesting in phase 2 when examining the contrast in approaches between some children in schools G and H. This contrast in approaches led to the development of the HL scale, which was the focus of the research in phase 3.

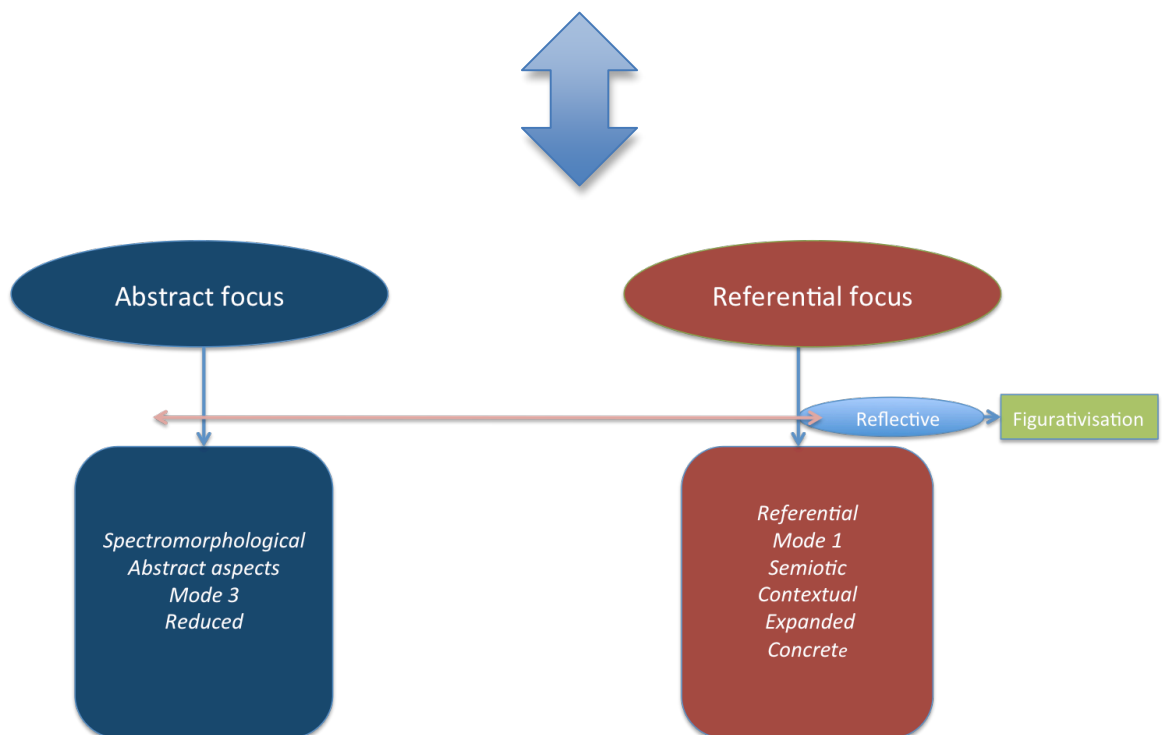
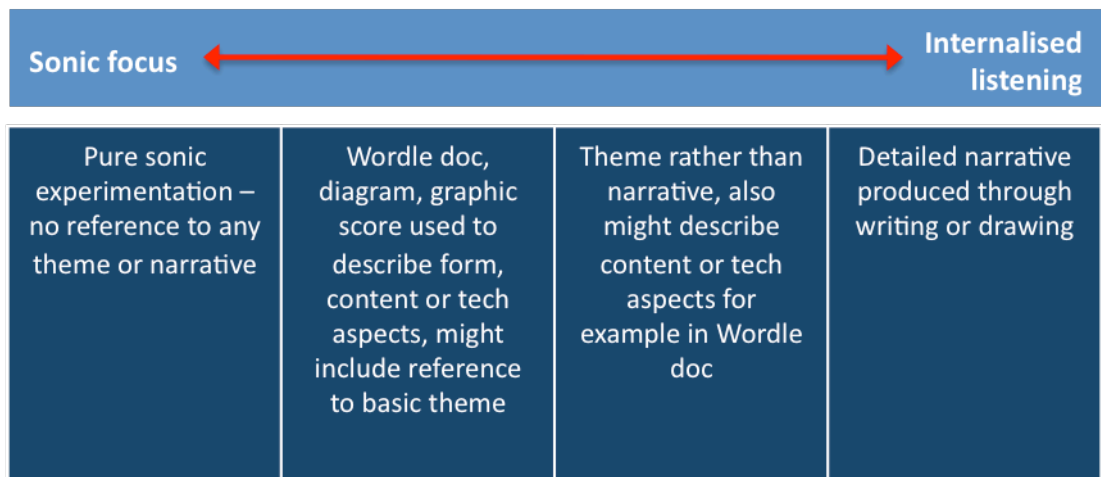
The HL scale (as described in section 4.4) includes different listening behaviours and the corresponding compositional activities. For example, at one end of the scale there is imaginative listening and creating narratives while at the other there

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<sup>1</sup> Sometimes answers were not clear as to whether it helped with both types of ideas (sonically or thematically) or one in particular. For example, see this answer from a pupil in school F: *It helped to give me some inspiration.*

is sonic **focus** and sonic experimentation. As suggested in section 2.5.1 reflective or imaginative listening can be related to recognising the sounds' intrinsic qualities as well as its referential qualities. Therefore, the HL scale could be compared to the shifting between modes shown in the parameter in Figure 2.3 discussed in section 2.5.1, as illustrated in the diagram in Figure 5.6.

At one end of this parameter there is Norman's (1996) reflective listening and Delalande's (1998) figurativisation, which are comparable to the internalised listening end of the HL scale. At the other end, Kim's (2010) spectromorphological listening and Schaeffer's (1966) mode 3 could be compared to the sonic **focus** end of the HL scale where the composer is purely concerned with sonic experimentation without any external reference. Just as many sound-based composers and listeners shift between the different modes of listening so the children in the HL2 doctoral project appeared to shift around the HL scale when creating their pieces. Although the listening strategies described in electroacoustic music theory often refer to expert levels of listening, some of the basic principles can be compared to the approaches of pupils in the HL2 doctoral project.



**Figure 5-6 Comparison of the HL scale with the parameter of abstract and referential listening types**

Phase 3 provided more detailed data on the scale and suggested that children might be drawn to a particular end of the scale depending on their experience, skills and interests. Referring to the scale could support approaches to teaching sbm composition that enable pupils to use their individual strengths, or in Gardner’s view intelligences (see section 2.2.2), to help structure their pieces. For example, one pupil might write a detailed narrative, others might produce a

drawing while some might create an abstract plan with no extra musical references.

The results suggest that many children use a combination of these approaches and in effect move around the scale in terms of how they apply their listening imaginations. The findings also indicate that in schools where the children have already developed conventional musical skills they might be less inclined to use narrative to guide their pieces. These children might be more likely to focus on the internal qualities of the sounds and this will be expressed in any plans they produce or descriptions of their work.

### **The HL scale and cognitive pluralism**

As already suggested, the concept of the HL scale relates to educational theories discussed in chapter 2 (section 2.2.2) such as cognitive pluralism and multiple intelligences. Cognitive pluralism is a term created by Vera John-Steiner (1995) in reference to Vygotsky's argument that there are multiple psychological tools that can develop in an individual depending on factors such as the culture they live in and activities they engage in (Moran and John-Steiner, 2003: 75). This is illustrated by examples of different mathematicians who use different mental representations to do their work. Some might use writing while others follow a more visual approach using diagrams. Similarly, Gardner, through his theory of multiple intelligences (1999: 33) seeks to expand the concept of intelligence so that it includes many different capacities.

What these theories recognise is that children can fail to reach their potential if learning is focused on particular modalities that do not correspond with their particular intelligences. Similarly, the HL scale suggests it is better to use an approach to teaching sbm composition that embraces pluralism in terms of pupil's particular strengths. Additionally, it is useful to consider that to be successful at composing sbm a range of different intelligences might be required. This is illustrated in the findings, which suggest that many children move around the HL

scale during the process of composing and engage in different activities that reflect different capacities.

The HL scale describes the creative role of listening in the composition process and how that was different for individual children in the research. The freedom to pursue a particular compositional pathway in accordance with their listening behaviour gave the children a sense of autonomy over their work, which can be linked with the concept of 'intrinsic motivation' as discussed in sections 2.2.3 and 4.3.4. The overall significance of this for the project will be examined in the next section.

### **Fun and novelty**

That creating sound compositions was 'fun' was the most common single theme in positive responses. This, as noted by the psychologist Mihaly Csikszentmihalyi (1996: 107) and discussed in section 2.2.3, is a common explanation for why people engage in creative activities. Csikszentmihalyi also argues (ibid: 108) that his research suggests that 'discovering something new' is the reason people most commonly give for explaining why it is they find a particular activity fun or enjoyable. This means fun, as discussed in chapter 4, is associated with novelty, which is an important aspect of 'intrinsic motivation' as defined by Ryan and Deci (2000: 70). Csikszentmihalyi (1996) describes a 'state of flow' that arises when people are engaged in an activity that they find rewarding and absorbing. Such activities can be described as intrinsically motivating or autotelic (Csikszentmihalyi, 1996: 113). In other words the activity is not pursued for external rewards, as the enjoyment is found in the experience itself. Novelty is an important factor in achieving this state and creativity by its very nature involves novelty. The sbm made in this project was concerned with recording sounds that were unique to particular schools, meaning the children were all working with original material in their compositions. This, combined with the whole process of creating sbm being a new experience for them, might partly explain why fun was the most single common theme. This is further supported by this remark from Csikszentmihalyi (1996: 113):

The process of discovery involved in creating something new appears to be one of the most enjoyable activities any human can be involved in.

It has also been argued (Ryan and Deci, 2000; Pink, 2010) that external motivations (such as rewards or punishments) can negatively affect a person's engagement and success with a particular task. When people feel pressured or tense in carrying out an activity it is more likely that some extrinsic motivation is involved (Deci and Ryan, 1985: 34). This suggests that, if the compositions had been graded or were required to fulfill set criteria, motivation would then have been reduced. Intrinsic motivation involves feeling 'competent and self-determining' (ibid), which would not have happened if the children were inhibited by a fear of failure caused by assessment of their work. Research (Amabile and Pillemer, 2012) shows that such external evaluation can significantly inhibit creativity. Although, as noted by Burnard and Younker (2002), some boundaries are necessary, restrictions were limited in terms of what the children could compose or the sounds they could record. In the same article Burnard and Younker also concluded that in order to foster pupil's creativity 'independence in decision-making must also be at the heart of the compositional experience' (ibid: 258). In the HL2 doctoral project children were therefore allowed creative freedom and autonomy over how their work could develop. The children's positive response to this is demonstrated by this quote from a pupil in school F:

*I liked the freedom to choose what sounds we could choose and the freedom to make our own compositions*

And these from pupils in school H:

*Because I could make it a sound story about something I like.*

*Making our own sound streams because you could make anything you wanted!*

Intrinsic motivation also involves challenges that are not too easy or difficult. In other words the challenges are suited to one's capacities or competencies. Csikszentmihalyi's (2002) state of flow, discussed in 2.2.3, will not be achieved by activities that are too easy as this will result in boredom. Similarly, activities that are too difficult will result in anxiety (ibid: 74). As Deci and Ryan (1985: 33) remark:

A challenge is something that requires stretching one's abilities, trying something new.

The children who took part in the workshops were composing a type of music that was unfamiliar to them with technology that they had not used before. As a result some of the work was challenging, but one of the purposes of the workshops was for them to develop enough competence to overcome this challenge.

Therefore, it seems that qualities of intrinsic motivation such as competence, autonomy and novelty were supported by the workshops. According to Deci and Ryan (2000) the qualities that contribute to intrinsic motivation represent 'innate psychological needs'. Research in educational contexts has suggested that how successful students are in achieving outcomes or goals can depend on how well these needs (such as autonomy) are satisfied and that such outcomes will also then be more likely to be associated with feelings of wellbeing (ibid: 240). This is supported by the quality of work (or successful outcomes) produced in the HL2 doctoral project and the strong theme of fun (associated with feelings of wellbeing) that emerged in positive responses.

Another quality of intrinsic motivation identified by Ryan and Deci (2000: 71) is that of 'relatedness'. Activities are less likely to be intrinsically motivating if performed in isolation. Intrinsic motivation is more able to flourish in situations where participants feel secure and supported by other human beings. This has been shown to have an effect in educational settings (ibid). Even though many

children in the HL2 doctoral project worked on individual compositions each case study was characterised by a sharing of knowledge and ideas between the pupils as well as from the researcher and teachers. This sometimes resulted in using effects in similar ways such as time stretch but it also allowed many children to make greater progress. This also relates to Vygotsky's zone of proximal development (ZPD) discussed in section 2.2.2. The opportunity to work together in this way enabled the children to extend their individual ZPDs, which was also more intrinsically motivating.

Intrinsic motivation can account for behaviours such as play and exploration that do not rely on external drivers for their sustainment (Deci and Ryan, 1982: 5). Such behaviours are central to social constructivist theories of learning (discussed in section 2.2) that advocate exploratory and autonomous activities and which underpin the approach of this project. Vygotsky believed, as discussed in 2.2.3, that play was an important factor in development (Vygotsky, 1978: 101) and Holzmann (Holzman, 2010: 14) views creative play as important for lifelong educational development. Playing with sounds in Audacity and experimenting with sounds for recording were central activities to the creative process of the HL2 workshops. By its very nature play is exploratory and involves pursuits that seek novelty, allow autonomy and are rewarding as ends in themselves. This is shown in this answer to Q4 from a pupil in school H:

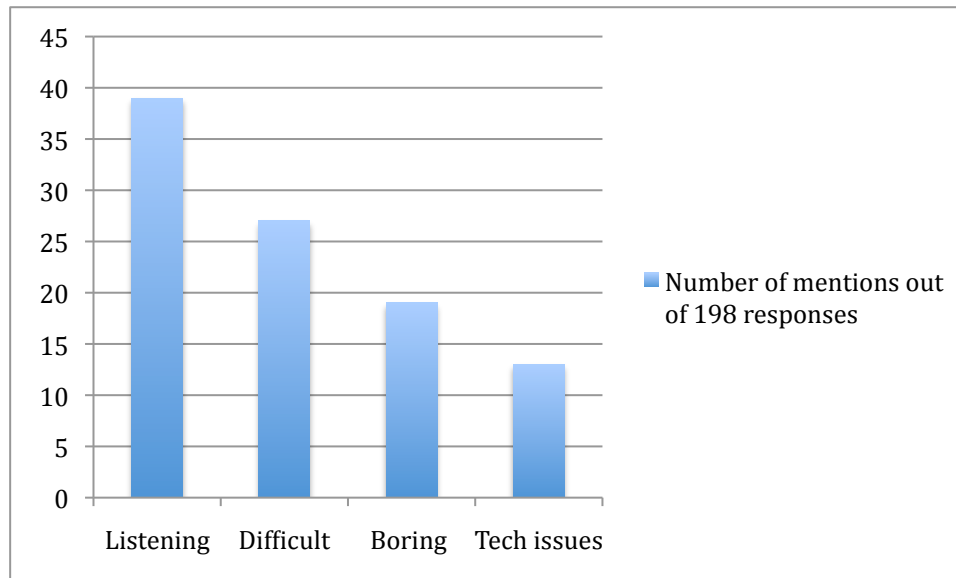
*Because you edit lots of sounds and explore with them.*

Therefore, play is intrinsically motivating and autotelic, which potentially helps to explain why the themes of fun and creativity arose in positive responses. However, as well as providing explanations for positive responses the concept of intrinsic motivation might also offer insights into the negative reactions.

### **Negative responses: Intrinsic motivation inhibited?**

The most common themes in negative responses given in the project relate to activities being too difficult, boring or uninteresting, which are the opposite of the conditions required for something to be intrinsically motivating.





**Figure 5-7 Overall common negative themes (Q2 and Q4)**

The graph in Figure 5.7 shows the main themes that arose from negative answers to Q2 (What did you not like?) and Q4 (Would you like to make a sound story again in the future?). Listening emerged as the most common theme overall. However, the figures have been slightly distorted by responses from school H, where the listening practice seemed less popular than in other schools and there were three classes. As discussed in chapter 4, listening was also a theme in positive responses at school H and the majority of pupils said that the listening practice helped them to make their compositions. The negative responses to the listening practice seemed to have been due to the unique conditions at school H (in particular the effect of timetabling and the school culture) and is an example of the complexity involved in the factors that determine engagement, as will be discussed further in 5.2.2.

To illustrate the effect of school H, the graph below in Figure 5.8 shows the themes with the figures for school H removed. Without school H the workshops being too 'difficult' is the most common theme and listening has the same number of mentions as technical issues. What is also interesting to note is that all the mentions for listening came in response to Q2 for which the most common response (nearly double those for listening) was 'nothing' or 'liked everything'.

Figure 5.9 shows the significant themes in the negative responses to Q4 only, which provided explanations for why the children did not want to make sbm again.

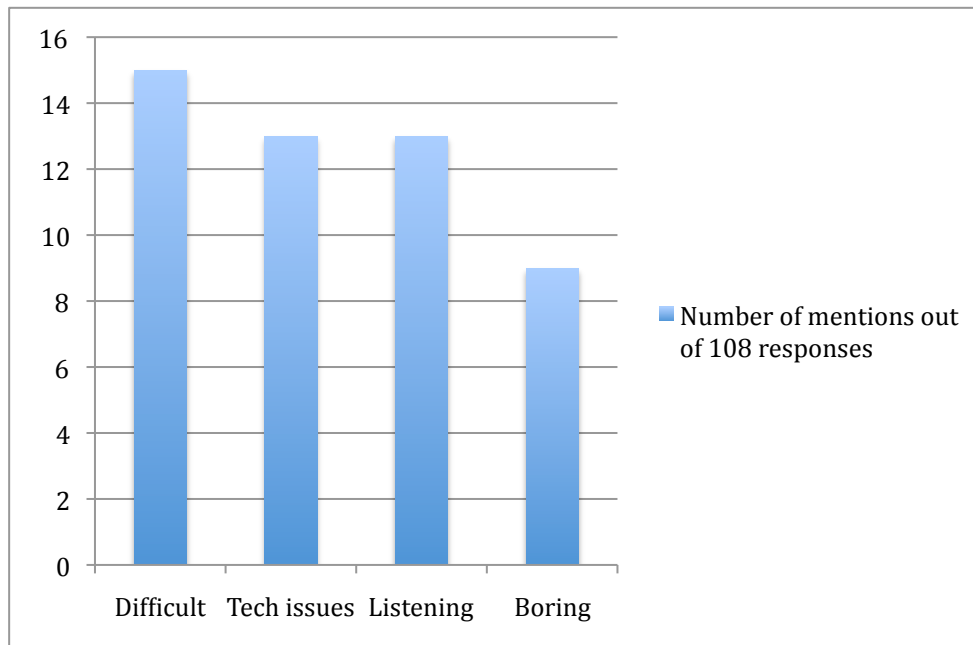


Figure 5-8 Overall negative themes without school H

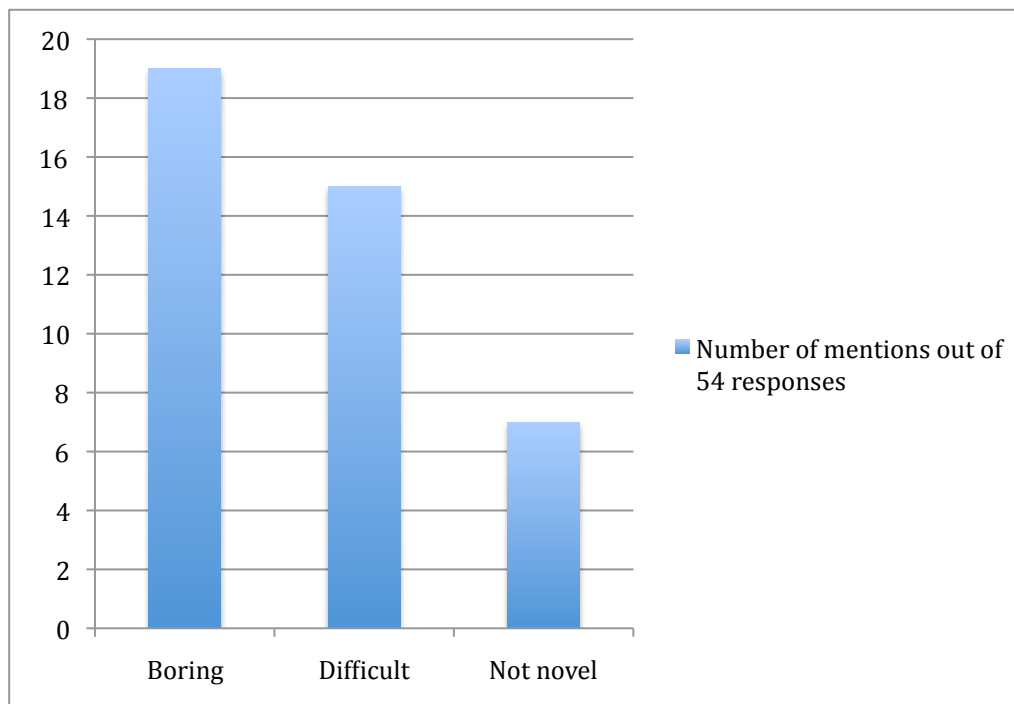


Figure 5-9 Overall common negative themes Q4

As shown above in Figure 5.9 the negative themes from Q4 are all related to factors that determine intrinsic motivation. Again school H has had a significant influence. The theme of not wanting to compose sbm again as it would no longer be a novel experience, was most common in school H. The children in school H seemed particularly interested in exploring new things and having new experiences, although this was also mentioned in school F, which as discussed was a similar school. Additionally, the timetabling in school H had an effect on responses as it meant the workshops were spread across the whole term giving the impression of them lasting for longer, meaning for some that the novelty of the experience was reduced. However, when considering that in total across all the case studies 221 children completed questionnaires the figures for these negative themes are low even including school H, suggesting that the majority of the children had a positive experience. Also, the most common theme in answer to Q2 (What did you not like?) was 'nothing' or 'liked everything', which was given by nearly a third of the pupils overall.

Overall, it could be that for some of the children who answered negatively the right conditions for intrinsic motivation were not established. This could have been due to not developing enough competence and confidence with the technology to overcome the challenges of the project or frustration with technical problems. Issues with technical problems can also affect feelings of autonomy, as the children might feel external factors are inhibiting their creative freedom. The tension and mixed feelings evident in some of the negative responses could also indicate the complexity of trying to meet these children's 'psychological needs' in relation to creating sbm. This underlines how teaching sbm composition should allow flexible approaches to cater for the different needs and abilities of those involved to make sure as many as possible can have a positive experience.

The effect of inhibiting intrinsic motivation could also have been due to children in some schools having more opportunities to be musically creative thereby reducing the novelty of the experience. This is supported by the greater number of negative responses in school F and H, which are schools that place significant emphasis on

creativity and the arts. In those schools there was an expectation from the pupils that they would have the opportunity to be creative in music lessons. In the other schools, for many of the pupils, creatively communicating through sound was a new experience. Often external factors, some of which were unique to each school, also had significant impacts on the children's experience. These local aspects will be discussed in following section.

### **5.2.2 Local conditions**

The other main theme in the project that appeared to have a significant impact on the success of the workshops in each case study was the particular local conditions at each school. This relates to complexity theory, which as explained in chapter 3 was influential on the project's methodology. The situation at each school and therefore the experience of the pupils was subject to a complex web of interrelated conditions. From this perspective, the results of interventions in social systems such as schools cannot usually be explained through simple cause and effect, as there are so many intertwined factors involved. In the HL2 doctoral project generalised patterns (such as the role played by creativity in high engagement) can be identified that show the effect the workshops had as case studies were organised in a variety of different school contexts across the Midlands. However, it is difficult to determine the full impact of some of the local circumstances in each case study, but those that seemed to have had the most significant impact are discussed below.

#### **Teacher's role**

The role taken by the teacher resulted in very different experiences across the eight schools visited. It could be argued that the quality of the work was more advanced in the schools where the teachers played the greatest roles (such as school B, F, G and H). The difference in these schools was that the teachers had more ICT confidence and were present at the majority of the workshops. This variance in the teachers' role was something that was difficult to avoid as it partly depended on the teacher's previous experience and external factors that

influenced their attendance. This again is a reflection of the contextual complexity that needs to be considered in such educational research. One of the key outcomes (see section 5.3) of the research is to provide resources (see the teacher pack in Appendix A) for teachers to run workshops in the future and help them to overcome the issues that affected some teacher's confidence. However, unlike issues of confidence that affect non-specialist teachers in relation to note-based music (see Seddon and Biasutti, 2008) this often was connected to ICT confidence. Those teachers who learnt Audacity most quickly (such as in schools B and H) appeared to take on a more active role.

Despite this, the teachers' roles did not appear to affect engagement, as responses to the questionnaires do not suggest a correlation between greater teacher involvement and higher pupil engagement. Indeed, the schools where the teachers played the greatest part (F and H) had the lowest levels of engagement, although this was probably more due to other factors such as age (see section 5.2.3), timetabling and previous musical experience (see below).

When class teachers missed particular workshops there was in a number of cases noticeable differences in behaviour, with the children less likely to be focused on their work. Where teachers were present each week and so therefore more familiar with the project (such as school B, F and H) they took a much greater role in the workshops particularly in demonstrating how to use Audacity. This was most noticeable in school H where the teacher was very involved and helped the children to create their own sound installation. As well as the sound installation some of the most accomplished compositions were produced in school H. This was due to a number of different factors, such as age and the culture of the school, but the teacher's commitment clearly played a key role in enabling this to happen. This also relates to a key issue in primary school music education where many teachers who teach music are not necessarily music specialists. Therefore the project and teacher resource pack were designed in such a way that previous musical training and knowledge would not be required to conduct the workshops.

### **Timetabling**

Another significant local factor was to do with timetabling and this in particular had an impact in school F and H. In school F the result of the workshops being run last thing on a Friday appeared to have an impact on focus and attention spans. This was observed by the researcher but was also confirmed by the teacher in feedback after a number of the workshops. The impact of having the lesson at this time (which had been moved from a different time due to arrangements at the school) meant also that the ICT suite was not available. As a result the children had to share laptops, which had a number of related problems detailed in chapter 4. It also meant that some children missed weeks, as they had to help organise events that were happening at the school over the weekend. Despite some good compositional work, this meant the children at school F were unable to fulfil their full potential in the project and might have contributed to the higher number of negative responses compared to other schools in phase 1.

As discussed in chapter 4 the timetabling issues at school H meant that two of the classes could not complete the full seven workshops. It also appeared to produce a perception of the project taking too long (evident in responses) as the workshops were spread across a whole term, which also affected momentum due to the breaks that happened on certain weeks. Interestingly the class who completed all seven workshops had the highest levels of engagement. Therefore it seems likely that these issues also contributed to the negative responses at the school. Another interesting local factor that appeared to have an influence on workshops was whether they were part of a music lesson.

### **Music lessons**

As was explained in section 4.3.4, the workshops being a part of music lessons also appeared to have a particular impact at school F and H. The data indicated that this affected both the children's engagement with the project and their creative use of the listening practice. As discussed above, it seemed in particular to influence engagement through the expectation of the children and their sense of novelty. This was also related to the creative culture of the schools where a decision had

been made to include music in the curriculum and employ music teachers for this purpose. Additionally, it appeared to influence the confidence with which the children worked on their compositions and made them more likely to operate on the sonic experimentation end of the HL scale. Also, the pieces included more elements of conventional music such as rhythm and pitch.

The apparent tendency towards conventional music in some of the work produced suggests that these pupils might have been more conservative in creating sbm than some of the other schools where the children had less formal music education (or NTM students as discussed in section 3.3.1). Although many of the pupils in school H and F were more ready to experiment with a wider range of effects, the way they used those effects seemed more likely to involve elements of conventional music than in other schools. However, there were exceptions to this in the work produced at school H and F so more data would be required to draw any firm conclusions on how this influenced their tendency towards conventional musical form. This could be an area for future research (see section 5.5) in connection with the HL scale as previous research (such as Hewitt, 2009; Seddon and O'Neill, 2003) has suggested that children with formal musical training are less likely to engage in exploratory behaviour when composing with computers. This is supported by Burnard and Younker (2002: 257), who found that children's previous musical experience has a considerable influence on their approaches to composition. How successful the children were at this depended as well on the ICT facilities and abilities of the pupils.

### **ICT**

As described in chapter 4, the workshops were particularly affected by ICT problems in school A, F and G, but there were some issues in many of the case studies. These were evident in negative responses and caused frustration by slowing the children's progress. ICT ability also varied across the case studies with the general level appearing less advanced in the schools located in more economically deprived areas (such as school D). However, the most significant

factor in levels of ICT literacy appeared to be age as the Year 3 and 4 children made less progress with Audacity.

### **Socio-economic background**

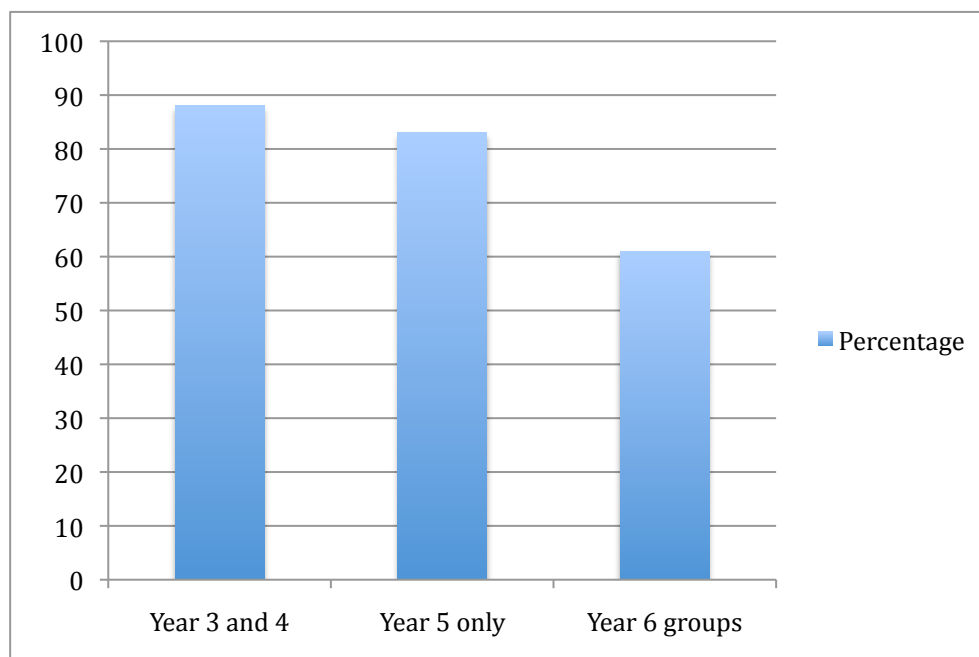
A factor that appeared to have an influence in relation to previous musical experience and ICT ability (as mentioned above) on both engagement, position on the HL scale and the form of the compositions was the socio-economic profile of the school. This is supported by the recent Warwick commission report (Neelands et al, 2015:47), which argues that children from economically disadvantaged backgrounds have fewer opportunities for cultural and creative experiences.

To some extent this seems to have been demonstrated by the data in the HL2 doctoral project where children in schools from more economically deprived areas who appeared to have less experience of formal music tuition, such as in schools G and D, had high levels of engagement and produced more work that was closer to the narrative end of the HL scale. Whereas schools H and F, which are based in affluent areas and whose pupils have more opportunities for music making, had lower levels of engagement and produced more work connected to the sonic experimentation end of the HL scale. Much more data would need to be collected to clearly establish how much this factor influences pupil's composition strategies for sbm, therefore as with the subject of music lessons discussed above, it could be an interesting area for future research in relation to the HL scale (see section 5.5).

### **5.2.3 Age**

As discussed above age appeared to be a factor in the children's ability to use the technology but it also seemed to have an effect on engagement. As demonstrated in section 4.3.4, engagement was stronger in phase 1 than phase 2, which focused on older age groups with the majority of children in Year 6. The graph in Figure 5.10 shows the number of positive responses to Q4 across the case studies by Year group.





**Figure 5-10 Overall positive responses to Q4 by year group**

It should be noted that the ‘Year 6 groups’ column in the graph includes some Year 5 children from the mixed classes in school H. However, when combined with the school F and G children (who were all from Year 6) the majority of this group was from Year 6. The graph suggests there was a pattern of engagement reducing with older age groups. This finding seems surprising as generally ICT ability increased with age across the case studies therefore there appears to be an inversely proportional relationship between age and ability in terms of engagement. The evidence that the younger groups had more difficulties with learning Audacity was part of the rationale for focusing on the older age groups in phase 2. The challenge of using Audacity did not appear to reduce engagement for these younger groups as the experience of using the software was something new and they were still able to make progress. However, the work produced by the older groups showed that some of them could become more technically advanced in the time available.

This means that despite in general having more competence (one of the factors involved in creating good conditions for intrinsic motivation) their engagement was still lower. However, the Year 6 groups were from school F and H and other factors (such as timetabling and how novel was the experience of being musically

creative) appeared to play significant roles in their level of engagement, although some of these other factors are also related to age. For example, novelty could have played a role for the younger groups, as they would have had fewer opportunities to compose any kind of music or to use ICT, making the experience even more novel.

As with Q4, positive responses to Q3 (Do you think the listening practice helped you to make your compositions?) were also lower in phase 2 (61%) than phase 1 (85%). As discussed in section 4.3.4, although 87% of children in school F (the only Year 6 group in phase 1) answered positively to Q3, listening was the most common theme in response to Q2 for this group. This suggests that engagement with the listening practice was also lower in the Year 6 groups.

The findings in relation to age and engagement are interesting in light of the 'open eared hypothesis' (Hargreaves 1982: 51) discussed in section 3.3.1, which suggests that children become less open to unconventional music when they enter adolescence. In general support of this, LeBlanc (1996) found that openness peaked at Year 6 and then declined as children enter adolescence. Also, other research suggests that music becomes more related to identity as children become adolescents (see Hargreaves and Marshall, 2003; North and Hargreaves, 1999). The relative maturity of the Year 6 children in school F and H was commented on by the teachers and it might be that some of these children are displaying behaviour more associated with adolescents at an earlier age, meaning that they are less open to new types of music.

#### **5.2.4 Overall conclusions**

The results have strongly indicated that Key Stage 2 children can engage with composing sbm using heightened listening as a creative tool. The data has revealed high levels of engagement throughout the project, although it suggests that this was lower in the older age groups of Key Stage 2. It also indicates that heightened listening can be used imaginatively to support the development of themes and

narratives but that this will not be appropriate for all children. The results suggest that the listening practice can support pupils in composing sbm but in a variety of different ways that will depend on the experiences and interests of particular pupils. The theory of the HL scale proposes that heightened listening can be used as a versatile tool to focus on the intrinsic qualities of sounds or on more imaginative or associative aspects.

The data also strongly indicates that creativity was the main driver of engagement as it produces novel experiences. Creativity flourishes when participants are allowed autonomy over their work and can develop a degree of competence in completing it. This was an important element of the project as it helped to facilitate intrinsic motivation in the pupils. Negative responses to the project were sometimes the result of a failure to create the right conditions for intrinsic motivation according to the needs of particular pupils. Often these needs were not met because of external issues that were part of the local context in which the workshops took place. The results demonstrate that the complexity of each learning environment can have a significant effect on a participant's ability to successfully compose sbm and his or her engagement with that process.

### **5.3 Contribution to knowledge**

This research provides a model that can be adapted and applied to different educational contexts for the introduction of sbm to primary school children through creative practice. The issue of how technology can be used within music education has been divided between using technology to emulate conventional instruments or using it to create new ways of working with sound (Savage and Challis, 2002: 8). This project seeks to demonstrate how technology can facilitate creativity with an unfamiliar form of music in ways that the pupils find engaging. The encouraging results from the project also support the proposal for the inclusion of sbm in more schools not only for the inherent satisfaction that can be derived from composing it, but also for the wider benefits identified by a number of teachers in this project. These benefits include improved aural awareness and ICT skills as well as links with subjects such as science by supporting an

understanding of acoustics. Additionally, as is discussed in section 5.4, it can be argued that there could be a link between engaging in the creative activities included in this project and increased wellbeing.

A number of pedagogical initiatives related to sbm identified in chapter 2 have focused on the appreciation of sbm using elements of creative work and developing aural awareness in children. However, the HL2 doctoral project makes a unique contribution in the following ways:

### **The use of heightened listening as a compositional tool for KS2 children**

None of the projects described in chapter 2 have focused on using heightened listening as a compositional tool for Key Stage 2 children in the context of UK education. In the HL2 doctoral project this was the primary means of engaging the children with sbm and unlike the EARS 2 project did not include an introduction to the conceptual aspects of sbm. While this undoubtedly is an important part of understanding sbm, it was thought that this is something the children could investigate later once their minds had been opened to sbm through starting to compose it. The research provides rich data suggesting that using listening practice to support compositional work is helpful for this age group.

### **The HL scale**

Listening has been used in a number of sound-based pedagogical initiatives especially in relation to soundscape music. However, the HL2 doctoral project has developed the theory of the HL scale to describe the different approaches used by children for applying their listening skills to composing sbm. This suggests a 'one-size fits all' approach to teaching sbm composition is not appropriate and offers teachers and researchers options to meet the needs of different children. A comparative analysis by Burnard and Younker (2002) of studies that investigated pupils' approaches to music composition found that children chose multiple pathways when composing. This depended on the needs of the pupils with the analysis suggesting that these were all different (ibid: 158). As recognised by Burnard (2011), musical creativity is not one fixed thing but a diverse range of

different activities and approaches that make up a 'scale of musical creativities' (ibid: 169). Although Burnard is talking about music in general, it is also true of compositional practices just within sbm. The data from the HL2 doctoral project reveals that this is also evident for children when composing sbm for the first time.

### **Creativity as the main driver for engagement with sbm**

The HL2 doctoral project has identified creativity as a principal driver in facilitating engagement with sbm for Key Stage 2 children. Although creative work has been a part of a number of other projects involving sbm the link between creativity and engagement has not been made as strongly in the other projects identified in chapter 2.

This finding is also significant because of the wider current debate around the importance of creativity in education. This has been highlighted by a number of reports (NACCCE, 1999; OFSTED, 2012; Warwick Commission, 2015) as discussed in section 2.2.3. Creativity has also been linked with wellbeing and this has been studied in educational contexts as well as in wider communities, for example in a recent study on the impact of creative partnerships on student wellbeing (McLellan et al, 2012). This was a study that involved pupils from 20 primary schools (as well as secondary schools) exploring how creative learning had affected student's wellbeing. It supports the findings of the HL2 doctoral project as one of the impacts revealed in the primary schools was higher levels of engagement with students often describing work with creative practitioners as 'fun' (ibid: v), which was most common theme identified in the HL2 doctoral project. One of the aspects identified by McClellan et al as why this was fun was the freedom to make decisions or in other words autonomy, which has also been evident in the HL2 doctoral project. The study also highlighted the cross curricula benefits of the creative activities, which is something that the HL2 doctoral project has highlighted in relation to sbm composition.

### **The influence of contextual complexity on engagement with sbm**

The HL2 doctoral project has highlighted the important role played by the interaction of local conditions in influencing the results of the project. ICT issues and the particular culture of the schools were identified as some of the key factors that form the fabric of these conditions. As discussed by Burnard (2007) the relationship between technology and creativity is an important consideration for the future of music education and the learning environment has a significant impact on this. The project would recommend that future projects closely consider these contextual issues as part of their methodologies.

### **Providing a resource for other educators and researchers**

It is hoped that the workshops devised for this project can be adapted for use in future projects and the soundbank is also available to support such projects. Other projects such as Wolf (2013), EARS 2 and research by Therapontos (2013) have provided excellent resources for teachers, but the HL2 doctoral project provides a unique set of workshops focused on listening and creative work. This is a key outcome of the project as the workshop structures have been tested in eight different schools and resulted in high levels of engagement for the pupils who took part. These workshops are outlined in the teacher pack that is included in Appendix A. Any of the audio material that was used in the sound bank is also available for teachers and other researchers upon request (see contact details in the front of the thesis).

The project recognises the pedagogical potential of sbm, the benefits of which could also support other disciplines. Teachers in the HL2 doctoral project identified how the workshops could benefit a number of subjects such as Science, English, ICT, Geography and Art. This research is another voice (see the AHRC Cultural Value Project, Crossick and Kaszynska, 2016; Warwick Commission, 2015) contributing to the increasing evidence of the wide-ranging benefits of the arts in education in a climate where their role has been reduced.

### **Age and engagement with sbm**

The project provides data from the different age groups within KS2 that suggest a relationship between age and engagement with sbm. Although age has been researched in terms of engagement with a number of forms of contemporary music (Hargreaves, 1982; LeBlanc, 1996; Kopiez and Lehmann, 2008), different KS2 age groups have not been compared in the UK in connection with sbm only.

## **5.4 Future recommendations for policy makers**

The results of the research have implications for national policy in relation to music education and a number of recommendations have been drawn from the findings that could be useful for policy makers in the coming years. These recommendations are:

1. Any music curriculum must include ample opportunity for creativity at all levels of music making in order to increase pupil's engagement with music education. This research suggests that this will support the children's intrinsic motivation meaning that they are more likely to pursue music as an activity that they find engaging and therefore make greater progress (for example, see the discussion in section 5.2.1 on page 302). Indeed, the results demonstrate such a central role for creativity in levels of engagement that the opportunity to be creative could be introduced more frequently in other subject areas in order to support progress.
2. Assessment of such creative activity needs to be carefully considered so as to not hinder the pupils' engagement, innovation and motivation. There is evidence to suggest that assessment can hinder pupils' intrinsic motivation (see Amabile and Pillemer, 2012). The freedom enjoyed by pupils in this research appeared to contribute to their motivation, as they were not hindered by a fear of failure.
3. The findings indicate that musical creativity will flourish when pupils' are allowed freedom to pursue their own musical ideas. This means that too many restrictions and restraints could hinder engagement, creativity and compositional accomplishment. It also suggests that musical activity needs

to have relevance to the children's own lives. Sbm has the potential to link well with pupils' lives as the material used can be recorded by the children from the environments that they live and learn in.

4. Technology when used innovatively has the power to open new boundaries in music making (see Savage, 2005). This can not only introduce pupils to new and unfamiliar forms of music but also allows children who have not had the opportunity to learn a conventional instrument the chance to communicate through and be creative with sound. Additionally, much of the software needed to create sbm can be downloaded for free, thus democratising children's access to music making. Giving all children the opportunity to make music was a central aim of the government's National Music Plan (DfE and DMCS, 2011).
5. The findings of this project suggest that sbm can support learning across a number of different disciplines. Feedback from teachers indicates that the development of listening and ICT skills when making sbm can support learning across the whole curriculum. Additionally, many of the effects used in sbm require the use of numeracy skills and the development of themes, narratives and graphical or text based scores use core literacy skills.
6. Composition of sbm can engage pupils through their creativity thereby enhancing their intrinsic motivation meaning that these core subject skills can be developed as part of activities the pupils find inherently rewarding and satisfying. This is a holistic view of education where disciplines such as music are not viewed as luxuries but as playing crucial roles that support and enhance understanding in core subject areas.
7. Additionally, the creative thinking that is also developed through sbm composition is extremely important as a skill in many areas beyond music and the arts, for example, for future scientists, engineers and entrepreneurs. Indeed, it could be argued that this is an important skill in most career paths.



## **5.5 Limitations of the current research and possible improvements**

Although the project has produced key findings that one hopes will be of value to researchers and teachers in the future, it is still useful to recognise areas of weakness in the research in order to make improvements for future projects and recommendations for other researchers. These are outlined below:

### **Questionnaires**

As discussed in section 3.3.3 there are disadvantages in using questionnaires that are particularly relevant in classroom situations with young children. For example, pupils might answer the way they think the teacher might wish them to. This might be overcome by disguising the purpose of the questionnaires (Kopiez and Lehmann, 2008), although this raises ethical questions that would need to be addressed as it compromises the principle of an informed consent. Also, for a number of reasons, pupils will not always be inclined to give detailed answers that clearly express their feelings. Additionally, pupils will sometimes like to discuss their opinions in order to develop them, as highlighted by Auker (1991).

This was illustrated in the workshops at school H where in one class in particular the questionnaires were not completed in total silence. It might be that future research should collect data from other means such as focus groups, which is a growing method for collecting data in educational research (Cohen et al, 2011: 436). This is a form of group discussion that develops through interaction within the group on a topic supplied by the researcher. This helps the participant view to more fully emerge not dictated by the researcher's agenda (ibid). Although there are clearly weaknesses with this approach in that it is a contrived setting in which peer pressure might be influential, it can be used to gather detailed qualitative data that could be triangulated with other sources such as questionnaires.

## **Teacher and observer**

As discussed in the section 3.3.3 the researcher acted as an 'observer as participant' during the research and had to conduct the workshops and be the observer of the workshops at the same time, which is referred to as 'participant observation' and is a method often used in educational research. However, for the researcher this involved greater participation in the workshops than had been originally intended due to factors (such as ICT confidence, other commitments, attendance) that prevented many of the teachers in taking a leading role. This meant that some of the issues associated with observations were particularly applicable to this research. For example, these could include those listed by Cohen et al (2011: 473) such as:

*Selective attention* - what the observer sees and how that is interpreted depends on a number of subjective factors, such as when and where the observer looks and the observer's own experiences and interests.

*Attention deficit* - the observer can easily miss something because they are distracted.

*Selective memory and selective data entry* - the observer might only remember certain events that seemed most significant or make a data entry determined by personal judgments rather than what actually happened.

There is also an issue of reliability with participant observation, as it can be difficult to repeat a study to check validity where a proportion of the data is based on the researcher's field notes and recollections (Denscombe, 2014: 222). However, some of these issues can be addressed by data triangulation, for example by making recordings of events (which is what happened in this research). Additionally, another means of dealing with this is to have more than one observer who is also observing the sessions according to agreed criteria that can be reflected in observation templates. This would help to address the issue of bias associated with participant observation (Yin, 2009: 102).

### **Data checks by an external reviewer**

As well as having an extra observer, findings can have more reliability and validity if the data is coded and interpreted by more than one researcher. This could have happened throughout the research with the 'chain of evidence' (Yin, 2009: 41) (much of which has been presented in this thesis) provided for the external researcher to check. This would be done to avoid any bias that could be introduced by the researcher and could therefore have influenced the way in which theory was developed from the data. This is an approach that is sometimes used in case study research (Cohen et al, 2011: 295). However, in the HL2 doctoral project as much data as possible has been presented within the thesis in order to give voice to the participants and minimise issues of bias.

The particular contributions and limitations identified above also indicate some key areas for future research. These will be discussed in the next section.

## **5.6 Future Research**

The research has collected a wide range of data from multiple case studies that have provided findings with a number of implications for future research. These suggest that future research could look at the following areas.

### **Gathering more data on the HL scale**

Phase 3 of the project focused on collecting data relating to the theory of the HL scale. Although the data supported the theory, which had been derived from the data collected in the first two phases, the third phase only used a small sample of five pupils in order to closely observe their individual approaches. As a result it would be useful to conduct larger studies that focus on the different approaches applied by children to composing sbm when using their listening practice as a creative tool. The results suggest that pupils with more previous musical experience might be inclined towards the sonic experimentation end of the scale. It would be interesting to collect more data on how particular school cultures and

environments influence this, including socio-economic factors. This could be done by visiting a range of schools to compare those where music is an important part of the curriculum with others where it is not.

### **Sbm and links with wellbeing**

The arts' impact on wellbeing is currently a prominent topic in research both in academia and by arts organisations (for example see Kilroy et al, 2008; Ings et al, 2012; Mowlah et al, 2014; Warwick Commission, 2015). As already discussed in the previous section this has been linked to education and creativity, which was the main factor in engagement in the HL2 doctoral project. This, combined with the particular skills (such as developing raised aural awareness, imaginative thinking, ICT skills and critical thinking) involved in composing sbm that could also influence wellbeing, make this an interesting area for future study. This could also involve investigating if children can achieve Csikszentmihalyi's 'state of flow' (discussed in sections 2.2.3 and 5.2.1) when using listening practice to compose sbm. A number of methods for measuring well-being using both quantitative and qualitative methods (see Cooke et al, 2011) have been devised and these can be applied to investigating the impact of creative arts practice on wellbeing (for example, see Challis, 2014).

### **Age and engagement with sbm**

The project found that engagement with sbm appeared to be less likely in the older age groups. It was not the main aim of the HL2 doctoral project to investigate the affect of age on engagement and it would be interesting for more studies to be conducted that focus primarily on this question.

### **Research using software designed for pedagogical uses**

One of the common issues in the research involved frustrations with the software. At times this was due to the ICT facilities at particular schools but sometimes this appeared to be a result of pupils having difficulties with the software itself. Audacity is an excellent resource; however, it is not specifically designed for use by children. It would be interesting to investigate how much further progress pupils

could make in their compositions by using software that responded better to their particular needs, which would make it more likely for the conditions for intrinsic motivation to be established. The Compose with Sounds software that is being developed as part of the EARS 2 (Landy et al, 2013) project would fulfil this need.

### **Extending the form of the creative outputs**

The experience in school H where the pupils created a sound installation based on their experience of the workshops offers potential ideas for how the scope of the workshops could be widened to include more sound-based art forms. This could include installations of the type built in school H that also incorporate visual art forms using video or animation. It could also involve more of a live performance where pupils trigger and manipulate sounds in front of an audience.

## **5.7 Closing comments**

The research demonstrates that composing sbm can be an engaging experience for Key Stage 2 pupils. Even taking into account that the validity of data from questionnaires can sometimes have issues relating to testing truthfulness (Denscombe, 2014: 182), the overall data, which has been triangulated from multiple sources, still indicates that sbm could be an engaging addition to the music curriculum. It is hoped that this research can be used as a resource for future educators and that the HL scale can be adapted and applied to different contexts. An issue that is commonly debated in the digital age is how music education can adapt to using new technology and the interdisciplinary perspective of this research, which combines music technology and education, adds new knowledge to this discussion. This project contributes to a growing body of research that demonstrates how music education has the potential to evolve in innovative and exciting ways that can facilitate new creative expression that is not available via traditional music education. The research recognises that pupils learn and create in diverse ways and advocates an approach to sbm composition that allows

students to follow their own particular pathways that respond to their own experience, needs, interests and abilities.

## 6 Bibliography

Ackermann E. (2001) Piaget's constructivism, Papert's constructionism: what's the difference? In: *Constructivism: uses and perspectives in education*, Vol 1 and 2, Conference Proceedings, Geneva, Research Center in Education (2001) pp. 85-94.

Ackermann, E. (2004) Constructing Knowledge and Transforming the World. In: *A learning zone of one's own: Sharing representations and flow in collaborative learning environments*, Tokoro, M., Steels, L. (eds.), 2004. Part 1. Chapt 2. pp. 15-37, Amsterdam, Berlin, Oxford, Tokyo, Washington, DC: IOS Press. [Online] available from [http://web.media.mit.edu/~edith/publications/2004-Constructing\\_Knowledge.pdf](http://web.media.mit.edu/~edith/publications/2004-Constructing_Knowledge.pdf) (Accessed 15th May 2014).

Amabile, T., Pillemer, J. (2012). Perspectives on the Social Psychology of Creativity. *The Journal of Creative Behavior*, 46(1), pp. 3-15.

Andean, J. (2013) Approaches to Narrative in Acousmatic Music. *Tape to Typedef, University Of Sheffield, 30th January 2013 – 2nd February 2013*. [Online] available from [https://www.academia.edu/4158926/Approaches to Narrative in Acousmatic Music](https://www.academia.edu/4158926/Approaches_to_Narrative_in_Acousmatic_Music) (Accessed 11<sup>th</sup> November 2015).

Andean, J. (2014) Sound and Narrative: Acousmatic composition as artistic research. *Journal of Sonic Studies*, 7 (06/06/2014). [Online] available from <http://www.researchcatalogue.net/view/86118/86119> (Accessed 11/11/2015).

Anderson, I. (2012) VOICE, NARRATIVE, PLACE: Listening to Stories. *Journal of Sonic Studies*, volume 2. [Online] available from <http://journal.sonicstudies.org/vol02/nr01/a10> (Accessed 10th May, 2012).

Augoyard, J.F., Torgue, H. (2005) *Sonic Experience: A Guide to Everyday Sounds*. Montreal: McGill-Queen's University Press.

Auker, P. (1991). Pupils talk, musical learning and creativity. *British Journal of Music Education*, 8 (2), pp. 161-166.

Barrett, N. (2007) Trends in electroacoustic music. In: Collins N. and d'Esquiván J. (eds.) (2007), *The Cambridge Companion to Electronic Music*. Cambridge: Cambridge University Press.

Beckman, M. (2008) *Multiple Ways of Knowing: Howard Gardner's Theory of Multiple Intelligences Extend and Enhance Student Learning*. [Online] available from [http://www.earlychildhoodnews.com/earlychildhood/article\\_view.aspx?ArticleID=19](http://www.earlychildhoodnews.com/earlychildhood/article_view.aspx?ArticleID=19) (Accessed 12<sup>th</sup> July 2015)

BERA (British Educational Research Association) (2011), Ethical Guidelines for Educational Research. [Online] available from <https://www.bera.ac.uk/wp-content/uploads/2014/02/BERA-Ethical-Guidelines-2011.pdf?noredirect=1> (Accessed 19<sup>th</sup> January 2016).

Bicknell-Holmes, T., Hoffman, P. S. (2000). Elicit, engage, experience, explore: Discovery learning in library instruction. *Reference Services Review*, 28(4), pp. 313-322.

Biggs, J. (1996) Enhancing teaching through constructive alignment. *Higher Education*, 32, pp. 347-364.

Biggs, J. and Tang, C. (2007) *Teaching for Quality Learning at University – What the Student Does*. Maidenhead: Open University Press.

Boden, M.A., (1994) What is creativity? In: Boden, M.A. (Ed.), *Dimensions of Creativity*, Cambridge, MA: MIT Press.

Boden, M.A. (2004) *The Creative Mind: Myths and Mechanisms*. London: Routledge.



Boden, M.A. (2010) *Creativity and Art: Three Roads to Surprise*. Oxford: Oxford University Press.

Bruner J. (1960) *The Process of Education*. Cambridge, MA: Harvard University Press.

Bruner, J. (1966). *Toward a theory of instruction*. Cambridge, MA: Belkapp Press.

Bruner, J. (1986) *Actual Minds, Possible Worlds*. Cambridge, MA: Harvard University Press.

Bruner, J. (1996) *The Culture of Education*. Cambridge, MA: Harvard University Press.

Bryman, A. (2012) *Social Research Methods*. Oxford: Oxford University Press.

Burnard, P. (2000) How children ascribe meaning to improvisation and composition: rethinking pedagogy in music education. *Music Education Research*, 2, pp. 7–24.

Burnard, P. (2006) Understanding children's meaning-making as composers. In: Deliège, I., Wiggins, G.A. (eds.) *Musical Creativity – Multidisciplinary Research in Theory and Practice*. Hove: Psychology Press, pp. 111 – 133.

Burnard, P. (2007). Reframing creativity and technology: promoting pedagogic change in music education. *Journal of Music, Technology and Education*, 1 (1), pp. 37 -55.

Burnard, P. (2011) Educational leadership, musical creativities and digital technology in education. *Journal of Music Technology and Education*, 4 (2+3), pp. 157–171.

- Burnard, P. (2012) *Musical Creativities in Practice*. Oxford: Oxford University Press.
- Burnard, P. and Younker, B.A. (2002) Mapping Pathways: Fostering creativity in composition. *Music Education Research*, 4(2), pp. 245-261.
- Burnard, P. and Younker, B.A. (2004) Problem-solving and creativity: insights from students' individual pathways. *International Journal of Music Education* 22(1), pp. 59-76.
- Byrne, D. (1998) *Complexity Theory and the Social Sciences*. London and New York: Routledge.
- Charmaz, K. (2014) *Constructing Grounded Theory*. London: Sage
- Chion, M. (1983) *Guide to Sound Objects, Pierre Schaeffer and Musical Research*. English translation by John Dack and Christine North. [Online] available from <http://www.ears.dmu.ac.uk/> (Accessed 14<sup>th</sup> May 2015).
- Cohen, L., Manion, L., Morrison, K. (2000) *A Guide to Teaching Practice*. London: Routledge.
- Cohen, L., Manion, L., Morrison, K. (2011) *Research Methods in Education* (7<sup>th</sup> ed.). London: Routledge.
- Cooke, A., Friedli, L., Coggins, T., Edmonds, N., Michaelson, J., O'Hara, K., Snowden, L., Stansfield, J., Steuer, N., Scott-Samuel, A. (2011) *Mental Wellbeing Impact Assessment: a toolkit for wellbeing* (3rd ed.). London: National MWIA Collaborative
- Copeland, D. (1999) Is it Indifference or Ambiguity? *Journal of Electroacoustic Music*, 12, pp. 6-8.

- Copeland, D. (2000) Associative Listening, *Soundscape: The Journal of Acoustic Ecology*. 1 (1), pp. 23-25.
- Craft, A., Jeffrey, B., Leibling, M. (2001) *Creativity in education*. London: Continuum.
- Cropley, A.J. (2001) *Creativity in education and learning*. London: Routledge Falmer.
- Crossick, G. and Kaszynska, P. (2016) Understanding the value of arts & culture. The AHRC Cultural Value Project. [Online] available from <http://www.ahrc.ac.uk/research/fundedthemesandprogrammes/culturalvalueproject/> (Accessed 20<sup>th</sup> April 2016)
- Cumberland, M. (2001), Bringing Soundscapes Into the Everyday Classroom. *Soundscape: The Journal of Acoustic Ecology*, 2 (2), pp. 16-20.
- Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention*. New York: Harper/Collins.
- Csikszentmihalyi, M. (2002) *Flow: the classic work on how to achieve happiness*. London: Rider.
- Dack, J. (1994) Pierre Schaeffer and the Significance of Radiophonic Art. *Contemporary Music Review*, 10 (2), pp.3-11.
- Davis, B. and Sumara, D. (2008) Complexity as a theory of education. *Transnational Curriculum Inquiry* 5 (2), pp. 33-44.
- Deci, E.L. (1975) *Intrinsic motivation*, New York: Plenum.
- Deci, E.L., Ryan, R.M. (1985) *Intrinsic Motivation and Self-Determination in Human Behavior*. New York: Plenum.

Deci, E., Ryan, M. (2000) The “What” and “Why” of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry*, Vol. 11, No. 4, 227–268

Degravelles, K. (2009) Recursive Readings: Chaos, Curriculum, and Walt Whitman in “Specimen Days”. *Complicity: An International Journal of Complexity and Education*, 6 (1), pp. 46-57.

Delalande, F. (1998) Music Analysis and Reception Behaviours: Sommeil by Pierre Henry. *Journal of New Musical Research*, 27 (1-2), pp. 13-66.

Denscombe, M. (2014) *The Good Research Guide for small-scale research projects*. Fifth Edition. Maidenhead: Open University Press.

Department for Education and Department for Media, Culture and Sport (DfE and DMCS) (2011) The importance of music: A national plan for music education. [Online] Available from [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/180973/DFE-00086-2011.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/180973/DFE-00086-2011.pdf) (Accessed 30<sup>th</sup> December, 2016).

Derry, J. (2013) *Vygotsky: Philosophy and Education*. Oxford: Wiley Blackwell

Dhomont, Francis (1995) “Acousmatic Update.” *Contact!* 8 (2). [Online] available from <http://cec.sonus.ca/contact/contact82Dhom.html> (Accessed 12th November 2015)

Drever, J. (2009) Soundwalking: Aural Excursions into the Everyday. In: Saunders, J. (ed.) (2009), *Ashgate Research companion to experimental music*. Farnham: Ashgate.

EARS: ElectroAcoustic Resource site (2007) *Glitch*. [Online] available from <http://ears.pierrecouprie.fr/spip.php?rubrique130> (Accessed 12<sup>th</sup> May 2016).

Elliott, D. J. (1995) *Music Matters*. New York: Oxford University Press

Emmerson, S. (1986) The Relation of Language to Materials. In: Emmerson, S. (ed.) *The Language of Electroacoustic Music*. London: Macmillan.

Emmerson, S. (2007) *Living electronic music*. Aldershot: Ashgate Publishing Ltd.

Etmektsoglou, I., Mniestris, A., Lotis, T. (2008) Balancing Between Schafer and Schaeffer in Refining Young Children's Aural Perception within an Ecological Approach to Education. *Paper presented at the Electroacoustic Music Studies Network International Conference 2008, Paris*. [Online] available from <http://www.ems-network.org/ems08/papers/etmektsoglou.pdf> (Accessed 12th November 2012).

Fautley, M. and Savage, J. (2007) *Creativity in Secondary Education*. Exeter: Learning Matters.

Field, A. (2007) New Forms of composition and how to enable them. In: Finney, J., Burnard, P. (eds.) *Music Education with Digital Technology*, pp. 156-168. London: Continuum.

Gardner, H. (1983) *Frames of Mind: The Theory of Multiple Intelligences*. New York: Basic Books.

Gardner, H. (1999) *Intelligence Reframed: Multiple Intelligences for the 21<sup>st</sup> Century*. New York: Perseus.

Gardner, H. (2001) Jerome S. Bruner, 1915 -. In: Palmer, J.A. (Ed.), *Fifty Modern Thinkers on Education From Piaget to the Present*. London: Routledge.

Goodwin, B. (2000) Out of control into participation. *Emergence*, 2 (4), pp, 40-9.

Gottfredson, L. S. (2004) Schools and the g factor. *The Wilson Quarterly*, Summer, pp. 35–45.

Hallam, S. (2002) Musical Motivation: Towards a model synthesising the Research. *Music Education Research*, 4(2), pp. 225-244.

Hallgarten, J. (2014) Closing the creativity gap. *RSA Journal*, 2, pp. 32-35. [Online] Available from <https://www.thersa.org/discover/publications-and-articles/journals/issue-2-2014> (Accessed 6<sup>th</sup> June, 2016).

Harrison, J. (1996) *Articles indéfinis*. [CD Liner notes]

Hargreaves, D. J. (1982) The development of aesthetic reactions to music. *Psychology of Music*, (Special issue) pp. 51–54.

Hargreaves, D.J. and Marshall, N. A. (2003) Developing Identities in Music Education. *Music Education Research*, 5 (3) pp. 263 – 274.

Hargreaves, D. J., North, A. C., Tarrant, M. (2006) Musical preference and taste in childhood and adolescence. In: McPherson, G., (ed.) *The Child as Musician*. New York: Oxford University Press, pp. 135–54.

Higgins, A.M. and Jennings, K. (2006) From Peering in the Window to Opening the Door: a constructivist approach to making electroacoustic music accessible to young listeners. *Organised sound*, 11 (2), pp. 179-187.

Holden, H. and Button, S. (2006) The teaching of music in the primary school by the non-music specialist. *British Journal of Music Education*, 23 (1), pp. 23-38.

Holland, D. (2011) *An empirical investigation into heightened listening as an access tool for electroacoustic music*. Masters by Research Thesis, De Montfort University. [Online] available from <https://www.dora.dmu.ac.uk/bitstream/handle/2086/5503/Finalwithcorrections.pdf?sequence=1> (Accessed 12<sup>th</sup> November 2013).

Holzman, L. (2010). Without Creating ZPDs There is No Creativity. In *Vygotsky and Creativity: A Cultural-historical Approach to Play, Meaning Making, and the Arts*, edited by Cathrene Connery, Vera John-Steiner and Ana Marjanovic-Shane. Peter Lang Publishers. [Online] available from <http://loisholzman.org/wp-content/uploads/2008/11/Without-ZPDs.final.pdf> (Accessed 22nd June 2015).

Ihde, D. (2007) *Listening and Voice: Phenomenologies of Sound*. Albany: State University of New York Press.

Ings, R., Crane, N., & Cameron, M. (2012) *Be creative be well. Arts, wellbeing and local communities: an evaluation*. London: Arts Council England.

John-Steiner, V., Cole, M. (1978) Editors Preface. In: Vygotsky, L. S. (1978) *Mind in Society*. John-Steiner, V., Cole, M., Scriber, S., Souberman, E. (eds.) Cambridge, MA: Harvard University Press, pp. ix-xi.

John-Steiner, V. (1995) Cognitive pluralism: A sociocultural approach. *Mind, Culture, & Activity*, 2 (1), pp. 2-11.

Kane, B. (2007) *L'Objet Sonore Maintenant: Pierre Schaeffer, sound objects and the phenomenological reduction*. *Organised Sound*, 12(1), pp. 1-11.

Kaufman, J. (2009) Beyond Big and Little: The Four C Model of Creativity. *Review of General Psychology*, 13 (1), pp. 1-12.

Kilroy, A, Garner, C, Parkinson, C, Kagan, C, Senior, P (2008) *Invest to Save: Arts in Health Evaluation, Exploring the impact of creativity, culture and the arts, on health and well being*. Arts For Health, Manchester Metropolitan University, January 2008.

Kim, S.J. (2010) Imaginal Listening: a quaternary framework for listening to electroacoustic music and phenomena of sound-images. *Organised Sound*, 15 (1) pp. 43-53.

Kolb, D. (1984) *Experiential Learning experience as a source of learning and Development*. New Jersey: Prentice Hall.

Kolber, D. (2002) Hildegard Westerkamp's Kits Beach Soundwalk: Shifting perspectives in real world music. *Organised Sound*, 7 (1), pp. 41-43.

Kopiez, R., Lehmann, M. (2008) The 'open-earedness' hypothesis and the development of age-related aesthetic reactions to music in elementary school children. *British Journal of Music Education*, 25 (2), pp. 121-138.

Krause, B. (2013) *The Great Animal Orchestra*. London: Profile.

Landy L. (1994) The "Something to Hold on to Factor" in Timbral Composition. *Contemporary Music Review*, 10 (2), pp. 49-60.

Landy, L. (1999) Reviewing the musicology of electroacoustic music: a plea for greater triangulation. *Organised Sound*, 4 (1), pp. 61-70.

Landy, L., (2006) The Intention/Reception project. In: M. Simoni (ed.) *Analytical Methods of Electroacoustic Music*, pp. 29-53, Appendix on DVD. New York: Routledge.

Landy, L. (2007) *Understanding the Art of Sound Organization*. Cambridge, MA: Massachusetts Institute of Technology.



Landy, L. (2012) *Making Music with Sounds*. New York: Routledge.

Landy, L., Hall, R. and Uwins, M. (2013) Widening Participation in Electroacoustic Music: The EARS 2 pedagogical initiatives. *Organised Sound* 18 (2) pp. 108-123.

LeBlanc, A., Sims, W. L., Siivola, C. and Obert, M. (1996) Music styles preferences of different age listeners. *Journal of Research in Music Education*, 44 (1): 49-59.

Lopez, F. (2001) Profound Listening and Environmental Sound Matter. In Cox, C. and Warner, D. (eds.) (2004), *Audio Culture: Readings in Modern Music*. London: Continuum.

Loveless, A., Burton, J. & Turvey, K. (2006) Developing conceptual frameworks for creativity, ICT and teacher education. *Thinking Skills and Creativity*. 1, pp. 3 – 13.

Lyall, C., Bruce, A., Tait, J. and Meagher, L. (2011) *Interdisciplinary Research Journeys: Practical Strategies for Capturing Creativity*. London: Bloomsbury.

Martin, J. (2013) Tradition and Transformation: Addressing the gap between electroacoustic music and the middle and secondary school curriculum. *Organised Sound*, 18, (2), pp. 101-107.

Martin, J. (2015). *Thinking in sound: The musical meaning-making of middle school students composing sound-based music*. Unpublished research report. Mount Allison University, Canada.

Mason, M. (2008) What Is Complexity Theory and What Are Its Implications for Educational Change? *Educational Philosophy and Theory*, 40, (1) pp 35-49.

McCartney, A. (1999) *Sounding Places with Hildegard Westerkamp*. PhD thesis, Graduate Programme in Music, York University, Toronto. [Online] available from <http://www.emf.org/guidetotheworld/artists/mccartney00/index.html> (Accessed 12th March 2011).

McCartney, A. (2002) Alien intimacies: hearing science fiction narratives in Hildegard Westerkamp's 'Cricket Voice'. *Organised Sound*, 7 (1), pp. 45-49.

McCartney, A. (2010) Soundwalking – creating moving environmental sound narratives. [Online] available from: <https://soundwalkinginteractions.wordpress.com/2010/09/27/soundwalking-creating-moving-environmental-sound-narratives/> (Accessed, 10<sup>th</sup> September 2015).

McCartney, A., Paquette, D. (2012) Walking, listening, speaking - The soundwalking interactions project. In Thibaud, J.P., Siret, D. (eds) *Ambiances in action / Ambiances en acte(s) - International Congress on Ambiances, Montreal 2012, Sep 2012*, Montreal, Canada. International Ambiances Network, pp. 189-194. [Online] available from <https://halshs.archives-ouvertes.fr/halshs-00745020/document> (Accessed 10th June 2016).

McGinley, R. (2001), Stockholm Soundscape Project New Directions in Music Education. *Soundscape: The Journal of Acoustic Ecology*, 2 (2), pp. 25-29.

McLellan, R., Galton, M., Steward, S., and Page, C. (2012) The Impact of Creative Partnerships on the Wellbeing of Children and Young People. Newcastle: Creativity, Culture and Education Culture and Sport Evidence Programme (CASE).

Meelburg, V. (2006) *New Sounds, New Stories: Narrativity in Contemporary Music*. PhD Thesis, Leiden University. [Online] available from [http://www.academia.edu/196590/New\\_Sounds\\_New\\_Stories\\_Narrativity\\_in\\_Contemporary\\_Music](http://www.academia.edu/196590/New_Sounds_New_Stories_Narrativity_in_Contemporary_Music) (Accessed 12<sup>th</sup> January 2016).

Moran, S. and John-Steiner, V. (2003) Creativity in the Making: Vygotsky's Contemporary Contribution to the Dialectic of Development and Creativity. In: Marschark, M. (ed.) *Creativity and Development*. New York: Oxford University Press, pp. 61–90.

Morrison, K. R. B. (2002) *School Leadership and Complexity Theory*. London: Routledge Falmer.

Morrison, K. (2006) Complexity Theory and Education. *APERA Conference, Hong Kong, 2006*. [Online] available from [http://edisdat.ied.edu.hk/pubarch/b15907314/full\\_paper/SYMPO-000004\\_Keith%20Morrison.pdf](http://edisdat.ied.edu.hk/pubarch/b15907314/full_paper/SYMPO-000004_Keith%20Morrison.pdf) (Accessed 10<sup>th</sup> April 2013).

Morrison, K. (2008) Educational Philosophy and the Challenge of Complexity Theory. *Educational Philosophy and Theory*, 40 (1), pp.19-34.

Mowlah, M, Niblett, V, Blackburn, J, Harris M (2014) The value of arts and culture to people and society: an evidence review. Manchester, Arts Council England (March 2014). [Online] available from <http://www.artscouncil.org.uk/publication/value-arts-and-culture-people-and-society> (Accessed 20th April 2016)

NACCCE (National Advisory Committee on Creative and Cultural Education) (1999) *All our futures: creativity, culture and education*. Sudbury, Suffolk: DfEE.

Nagai, M. (2011). Listen Compose Listen: A study of perception, process and the spaces between in two works made from listening. *Organised Sound*, 16 (3), pp. 211–219.

National Academy of Sciences, National Academy of Engineering and Institute of Medicine (2005) *Facilitating Interdisciplinary Research*. Washington: The National Academies Press.

Neelands, J. and Belfiore, E., Firth, C., Hart, N., Perrin, L., Brock, S., Holdaway, G., Waddis, J. (2015) *Enriching Britain, culture, creativity and growth: the 2015 report by the Warwick Commission on the future of cultural value*. The University of Warwick 2015. [Online] Available from [http://www2.warwick.ac.uk/research/warwickcommission/futureculture/finalreport/warwick\\_commission\\_report\\_2015.pdf](http://www2.warwick.ac.uk/research/warwickcommission/futureculture/finalreport/warwick_commission_report_2015.pdf) (Accessed 9th July 2015)

Nilsson, B. Folkestad, G. (2005) Children's practice of computer-based composition. *Music Education Research*, 7 (1), pp. 21-37.

Norman, K. (1994) Telling Tales. *Contemporary Music Review*. 10 (2), pp. 103-109.

Norman, K. (1996) Real-World Music as Composed Listening. *Contemporary Music Review*, 15 (1) pp. 1-27.

Norman, K. (2004) *Sounding Art: Eight Literary Excursions through Electronic Music*. Hants: Ashgate.

Norman, K. (2010) Conkers (listening out for organized experience). *Organised Sound* 15 (2) pp. 116-124.

Normandeau, Robert (1992) *Un Cinéma Pour l'Oreille*. Doctoral dissertation. Montreal: Université de Montréal.

Normandeau, R. (2008) Interviewed by David Ogborn. *eContact!*, 11 (2). [Online] available from [http://econtact.ca/11\\_2/normandeau\\_o\\_ogborn.html](http://econtact.ca/11_2/normandeau_o_ogborn.html) (Accessed 30th October, 2015)

North, A.C. and Hargreaves, D.J. (1999) Music and Adolescent Identity. *Music Education Research*, 1(1), 75-92.

O'Callaghan, (2011) Soundscape Elements in the Music of Denis Smalley. *Organised Sound* 16 (1), pp. 54-62.

Office for Standards in Education (OFSTED), (2011) Creative writers – a workshop approach: Castle View Primary School. [Online] available from [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/392007/Castle\\_20View\\_20Primary\\_20School\\_20\\_20Good\\_20practice\\_20example.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/392007/Castle_20View_20Primary_20School_20_20Good_20practice_20example.pdf) (Accessed 12th November 2015)

Office for Standards in Education (OFSTED), (2012), *Music in schools: wider still, and wider: Quality and inequality in music education 2008-11*. London: OFSTED. [Online] available from <https://www.gov.uk/government/publications/music-in-schools> (Accessed 9<sup>th</sup> July 2015).

Oliveros, P. (2005) *Deep Listening: A Composer's Sound Practice*. New York: iUniverse, Inc.

Olson, M and Raffanti, M. (2004) Grounded Learning: An Application of Grounded Theory In Educational Practice. [Online] available from <http://home.mindspring.com/~tagregory/sitebuildercontent/sitebuilderfiles/RO.pdf> (Accessed 15<sup>th</sup> March 2013).

Papert, S. (1993) *Mindstorms: Children, Computers, and Powerful Ideas*. Cambridge, MA: Perseus.

Perkins, D. (1999) The Many Faces of Constructivism. *Educational Leadership*, 57 (3), pp. 6-11.

Piaget, J. (1953) *The Origin of Intelligence in the Child*. London: Routledge.

Piaget, J. (1972) *The psychology of the child*. New York: Basic Books.

Pink, D. H. (2010) *Drive: The Surprising Truth About What Motivates Us*. Edinburgh: Cannongate Books.

Pring, R. (2009) *Philosophy of Educational Research*. London: Continuum.

Punch, K.F. and Oancea, A. (2014) *Introduction to Research Methods in Education*. London: Sage.

Regelski, T.A. (2002) Sound compositions for expanding musicianship education. *Organised Sound*, 7 (1), 29-40.

Ricca, B. (2012) Beyond Teaching Methods: A Complexity Approach. *Complicity: An International Journal of Complexity and Education*, 9 (2), pp. 31-51.

Robinson, K. (2001) *Out of our minds: Learning to be creative*. Chichester: Capstone Publishing Ltd.

Robinson, K. (2009) *The Element: How Finding Your Passion Changes Everything*. London: Penguin.

Ryan, R.M., Deci, E.L. (2000) Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development and Well-Being. *American Psychologist*, 55 (1), pp. 68-78.

Savage, J., Challis, M. (2002) A Digital Arts Curriculum? Practical ways forward. *Music Education Research*, 4 (1), 7-23.

Savage, J. (2005) Working Towards a Theory for Music Technologies in the Classroom: How Pupils Engage With and Organise Sounds With New Technologies. *British Journal of Music Education*, 22(2), pp. 167-80.

Savage, J. (2007) Pedagogical Strategies for Change. In: Finney, J., Burnard, P. (eds.) *Music Education with Digital Technology*. London: Continuum, pp. 142-155.

Schafer, R.M. (1977) *The Tuning of the World*. Rochester: Destiny Books.

Schafer, R.M. (1986) *The Thinking Ear*. Toronto: Arcana.

Schafer, R.M. (2011) Keynote Lecture. *World Forum For Acoustic Ecology Conference, Ionian University, Corfu, Greece, 3-7 October 2011*. [Online] available from <http://soundexplorations.blogspot.co.uk/2015/11/lecture-r-murray-schafer-wfae-corfu.html> (Accessed 5th February 2016).

Schaeffer, P. (1966) *Traite´ des objets musicaux*. Paris: Éditions du Seuil.

Scott, S. J. (2006) A constructivist view of music education: Perspectives for deep learning. *General Music Today*, 19(2), pp. 17-21.

Seddon, F. and Biasutti, M. (2008) Non-music specialist trainee primary school teachers' confidence in teaching music in the classroom. *Music Education Research*, 10 (3), pp. 403-421.

Seddon, F. A. and O'Neill, S. A. (2003) Creative Thinking Processes in Adolescent Computer-based Composition: an analysis of strategies adopted and the influence of instrumental music training. *Music Education Research*, 5 (2), pp. 125-137.

Seifert, K. Sutton, R. (2011) *Educational Psychology*. [Online] Third Edition, available from <https://dl.dropboxusercontent.com/u/31779972/Educational%20Psychology.pdf> (Accessed 3<sup>rd</sup> June 2016)

Smalley, D. (1986) Spectro-morphology and Structuring Processes. In: Emerson, S. (ed.) (1986), *The Language of Electroacoustic Music*. London: Macmillan.

Smalley, D. (1996) The listening imagination: Listening in the electroacoustic era. *Contemporary Music Review*, 13 (2), pp. 77-107.

Smalley, D. (1997) Spectromorphology: explaining sound-shapes. *Organised Sound*, 2 (2), pp. 107-26.

Smolucha, F. (1992) A reconstruction of Vygotsky's theory of creativity. *Creativity Research Journal*, 5(1), pp. 49-67.

Sound and Music, (2012) *Minute of Listening: Pilot II Evaluation*. [Online] available from <http://soundandmusic.org/sites/default/files/projects/files/MOL%20Final%20Evaluation%20Report.pdf> (Accessed 12<sup>th</sup> November 2014)

Sound and Music, (2014a) *Listen Imagine Compose Research Report*. [Online] available from <http://www.soundandmusic.org/sites/default/files/projects/files/LIC%20Final%20Report%20web%20version.pdf> (Accessed 12<sup>th</sup> November 2014)

Sound and Music, (2014b) *Sonic Postcards*. [Online] available from <http://www.soundandmusic.org/projects/sonic-postcards> (Accessed 12<sup>th</sup> November 2014)

Sonic Explorers, (2014) *About sonic explorers*. [Online] available from <http://www.sonicexplorers.org/about.html> (Accessed 10<sup>th</sup> December 2014).

Sound.Son, (n.d.) *Sound.son: an international exchange through music and technology*. [Online] available from <http://music.columbia.edu/soundson/intro.php?lang=english> (Accessed 12<sup>th</sup> November 2014)



Stacey, R.D. (2000) *Strategic Management and Organisational Dynamics*. Harlow: Pearson Education.

Strauss, A. and Corbin, J. (1994) Grounded theory methodology: an overview. In: Denzin, N.K. and Lincoln, Y.S. (eds.), *Handbook of Qualitative Research*, pp. 273-285. London; Thousand Oaks: Sage.

Strauss, A. and Corbin, J. (1998) *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. 2<sup>nd</sup> ed. London: Sage.

Strauss, A. and Corbin, J. (2015) *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. 4<sup>th</sup> ed. London: Sage.

The City of Rings, (n.d.) *About the Project*. [Online] available from <http://thecityrings.org/> (Accessed 13<sup>th</sup> November 2014)

Therapontos, N. (2012) Sound-based music curriculum Finding the meaning and meaningfulness of sound. *Proceedings of the Electroacoustic Music Studies Network Conference Meaning and Meaningfulness in Electroacoustic Music, Stockholm, June 2012*. [Online] available from <http://www.ems-network.org/spip.php?article348> (Accessed 12<sup>th</sup> May 2013)

Therapontos, N. (2013) *Evolving Music Education in the Digital Age – Sound - Based Music Public School of Cyprus*. PhD thesis, De Montfort University. [Online] available from <https://www.dora.dmu.ac.uk/xmlui/handle/2086/11609> (Accessed 12th December 2016).

Truax, B. (2001). *Acoustic Communication*. Westport: Ablex.

Truax, B. (2002) Genres and techniques of soundscape composition as developed at Simon Fraser University. *Organised Sound*, 7 (1), pp. 5-14.

Tzedaki, A. (2011) *Into the sounding environment: A compositional approach*. PhD thesis. De Montfort University. [Online] available from [https://www.dora.dmu.ac.uk/bitstream/handle/2086/6529/Thesis\\_Tzedaki\\_Tzedaki\\_Aikaterini.pdf?sequence=1](https://www.dora.dmu.ac.uk/bitstream/handle/2086/6529/Thesis_Tzedaki_Tzedaki_Aikaterini.pdf?sequence=1) (Accessed 9<sup>th</sup> November 2012).

Uimonen, H. (2011) *Dollar Soundscapes*. [Online] available from <http://dollarsoundscapes.blogspot.co.uk/2011/04/homework-recording.html> (Accessed 8<sup>th</sup> November 2012).

Uimonen, H. (2011) Everyday Sounds Revealed: Acoustic communication and environmental recordings. *Organised Sound*, 16 (3), pp. 256–263.

Urry, J. (2005) The Complexity Turn. *Theory, Culture & Society*, 22(5), pp. 1–14.

Vygotsky, L.S. (1978) *Mind in Society*. Cambridge, MA: Harvard University Press.

Vygotsky, L. S. (1987) *The collected works of L. S. Vygotsky. Vol. 1*. New York: Plenum.

Wadsworth, B.J. (2004) *Piaget's Theory of Cognitive and Affective Development*. Boston: Pearson Education.

Wagstaff, G. (2001) With the Calm, Comes Silence. *Soundscape: The Journal of Acoustic Ecology*, 2 (2), pp. 30-32.

Waldrop, M.M. (1992) *Complexity: the emerging science at the edge of order and chaos*. New York: Simon & Schuster Paperbacks.

Waterhouse, L. (2006) Inadequate Evidence for Multiple Intelligences, Mozart Effect, and Emotional Intelligence Theories. *Educational Psychologist*, 41 (4), pp. 247–255.

Weale, R. (2005) *The Intention/Reception Project*. Phd. Thesis, De Montfort University, Leicester. [Online] available from <https://www.dora.dmu.ac.uk/handle/2086/10274> (Accessed 12th November 2015).

Weale, R. (2006) Discovering How Accessible Electroacoustic Music Can Be: the Intention/Reception project. *Organised Sound*, 11 (2) pp. 189-200.

Webster, P. (2011) Constructivism and Music Learning. In: R. Colwell and P. Webster (Eds.) *MENC Handbook of Research on Music Learning, Vol. 1*. New York: Oxford University, pp. 35-83.

Wenger, E. (2006) *Communities of practice: a brief introduction*. [Online] available from [http://www.ewenger.com/theory/communities\\_of\\_practice\\_intro.htm](http://www.ewenger.com/theory/communities_of_practice_intro.htm) (Accessed 5<sup>th</sup> January 2013).

Westerkamp, H. (1999) *Soundscape Composition (1) : Linking Inner and outer Worlds*. [Online] available from <http://www.sfu.ca/~westerka/writings%20page/articles%20pages/soundscapecomp.html> (Accessed 7th March 2013).

Westerkamp, H. (2000) Editorial. *Soundscape: The Journal of Acoustic Ecology*, 1 (1), pp. 3-4.

Westerkamp, H. (2001a) *Soundwalking*. [Online] available from <http://www.sfu.ca/~westerka/writings%20page/articles%20pages/soundwalking.html> (Accessed 8th November 2013). Originally published in *Sound Heritage*, 3(4), 1974.

Westerkamp, H. (2001b) Editorial. *Soundscape: The Journal of Acoustic Ecology*, 2 (2), pp. 3-4.

Westerkamp, H. (2002) Linking soundscape composition and acoustic ecology. *Organised Sound*, 7 (1), pp. 51-56.

Westerkamp, H. (2006) Soundwalking as Ecological Practice. [Online] available from <http://www.sfu.ca/~westerka/writings%20page/articles%20pages/soundasecology2.html> (Accessed, 20<sup>th</sup> July 2015).

Westerkamp, H. (2011) Exploring Balance & Focus in Acoustic Ecology. *Soundscape: The Journal of Acoustic Ecology*, 11 (1), pp. 7-13.

Wiggins, R. A. & Wiggins, J. (2008). Primary music education in the absence of specialists. *International Journal of Education & the Arts*, 9(12), pp. 1-27.

Williams, D.B. (2011) The non-traditional music student in secondary schools of the United States: Engaging non-participant students in creative music activities through technology. *Journal of Music Technology and Education*, 4 (2+3), pp. 131–147.

Windsor, W. L. (2000) Through and around the acousmatic: the interpretation of electroacoustic sounds. In: Emmerson, S. (Ed.). *Music, Electronic Media and Culture*. Aldershot: Ashgate).

Wishart, T. (1986) Sound Symbols and Landscapes. In: Emmerson, S. (ed.) (1986), *The Language of Electroacoustic Music*, London:Macmillan.

Wishart, T. (1996) *On Sonic Art*. Amsterdam: Harwood Academic.

Wolf, M. (2013a) *The Appreciation of Electroacoustic Music – An Empirical Study with Inexperienced Listeners*. PhD thesis, De Montfort University. [Online] available from <https://www.dora.dmu.ac.uk/handle/2086/8680> (Accessed 13th March 2014).

Wolf, M. (2013b) The Appreciation of Electroacoustic Music: The prototype of the pedagogical ElectroAcoustic Resource Site. *Organised Sound* 18 (2) pp. 124-133.

Wolf, M. and Younie, S. (2016) Overcoming Barriers of Teaching Sound-based Music. In: Himonides, E. and King, A., *Researching Music, Education, Technology: Critical Insights*. Proceedings of the SEMPRES MET 2016, pp. 119-124.

Wood, D., Bruner, J. S., & Ross, G. (1976) The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry*, 17, pp. 89–100.

World Soundscape Project (1978) *The Vancouver Soundscape (Music of the environment series)*. R.M. Schafer, (ed.) Vancouver, British Columbia: A.R.C. Publications.

Wrightson, K. (2000) An Introduction to Acoustic Ecology. *Soundscape: The Journal of Acoustic Ecology*, 1 (1), pp. 10-13.

Yin, R. (2009) *Case Study Research: Design and Methods* (4<sup>th</sup> ed.). Los Angeles: Sage.

**Developing heightened listening:  
A creative tool for introducing  
primary school children to  
sound-based music**

**Volume 2 of 2**

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**Submitted in partial fulfilment of  
the requirements for the degree of  
Doctor of Philosophy**

**De Montfort University**

**July 2016**

**Research sponsored by the AHRC Midlands3Cities Doctoral  
Training Partnership**

# Appendices

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## **Heightened Listening and Sound Composition Workshops**

### **Information for teachers**

This document presents a detailed outline of the workshops and is designed as an information pack for teachers. A glossary is provided at the end, any terms included in the glossary are written in *italics* followed by a \* symbol within the text.

### **Aims and Objectives of the workshops**

The workshops aim to:

- Help pupils develop *heightened listening*\* skills and use them to help create *sound-based music*\* compositions.
- Build musical confidence in pupils of all abilities. Sound-based music provides a unique opportunity for children without musical training to creatively explore communication through sound.
- Help enable (through workshop exercises) an *internalised listening*\* that explores imaginative associations with sounds that could be used to develop themes or narratives for compositions.



## **Workshop 1**

The project consists of seven workshops where pupils work towards producing their own sound compositions. These will be performed in the final workshop.

The first session will focus on listening. Through participating in this workshop the pupils will:

- Understand in general terms the main aims of the workshops and what they will involve.
- Begin to open their ears to the sounds around them through simple listening exercises.
- Engage in focused listening to environmental sounds by participating in a soundwalk in the local area.
- Discuss and reflect on the sounds encountered during the walk and their different characteristics.

**Short introduction – concerning listening.** This will introduce the pupils to the workshops and the idea of learning to listen attentively. It can be suggested that this is a valuable but difficult skill to learn to do well.

Questions can be asked to illustrate this and trigger discussion, such as:

- Do you ever feel that other people are not listening to you and talk over you?
- Do you ever do that to other people?
- What your favourite sounds?

### **Listening Exercise 1**

Ask the children to sit down without making any sound and then discuss whether this is possible. This draws their attention to quieter sounds and the fact that there is always something to listen to (see Schafer, 2011).

### **A minute's listening in the classroom**

This is intended to relax the participants and focus their attention first by listening to their breath then extending this to the sounds around them. It is a good idea to make sure windows are open so that different sounds can be heard from outside. After listening, each pupil will create their own listening list on paper following which the class will collaboratively produce an overall list of all the sounds heard (see Cumberland, 2001).

### **Soundwalk**

A *soundwalk\** is where a group (or a single person) walk quietly through a chosen area listening closely to the sounds around them. A route for the soundwalk can be pre-planned to help ensure that a variety of sounds are encountered (although nothing can be guaranteed and the unpredictable nature of soundwalks is partly what makes them so interesting). It is often interesting to conduct the walk around the school grounds and through the school itself. Soundwalks should be conducted without any talking and the pace

should be slow. Participants can point towards sounds that are interesting if they want to share something they think others might have missed.

The soundwalk leader will record the soundwalk in case there are any interesting sounds that the children might want to use in their compositions. The soundwalks should last approximately 10 minutes and beforehand they will be given a set of questions/instructions to think about when listening (see the following page).

The soundwalk instruction sheet facilitates a more focused listening than the classroom exercise, it encourages children to think about sound characteristics (such as pitch and volume) and also to start evaluating sounds in preparation for deciding which sounds to record or include in compositions.

The next page shows an instruction sheet to guide the children on their soundwalk; this can be adapted for particular situations or to encourage them to focus on certain sounds such as the wind.

## Soundwalk

👂 *What do you hear?*

*Lead your ears away from these sounds and listen beyond .... into the distance*

*What else do you hear?*

*What else?*

*What else?*

*Which sounds are the **LOUDEST**?*

*Which are the quietest?*

Are they **HIGH** or **LOW** in pitch?

*Which sounds would you keep? 😊*

*Which sounds would you scrap? 😞*

### **Discussion / writing /mapping**

There will be a discussion immediately after the soundwalk about what was heard and then they will list the sounds in relation to the questions on the instruction sheet. They will then write out ideas for what the sounds reminded them of, made them think of or sounded like.

This can be done in groups by creating a sound map on a large piece of paper showing the route of the soundwalk and where particular sounds were heard. Symbols can then be put next to the sounds for example to show whether the children liked or disliked them or whether they were loud or quiet.

**Homework** – *What are the most interesting sounds you hear during the week? Why do you find them interesting?*

### **Workshop 2**

Through participating in this workshop the pupils will:

- Learn to record sounds using a digital recorder
- Collect any interesting sounds they discover in the school.
- Begin to develop a reflective listening that uses the imagination through discussion and written exercises.

Resources needed:

- Digital recorder (or even use a mobile phone or ipad)
- Headphones

**Recap/introduction – what did we do in workshop 1?**

## **Written exercise – 10 minutes**

This short written exercise will relate to the sounds they heard in their soundwalks. In these exercises participants will be encouraged to consider the meaning and significance of sounds for them as listeners. It is intended that through these exercises, ideas for using the sounds as part of themes or narratives within compositions might be developed.

### **Example exercise:**

*Did any of the sounds on the soundwalk make you think of other things? These could be feelings or anything else they sparked in your imagination. For example, the buzzing of bees might make you think of summer or it might make you think about being stung or it might even sound a bit like motorbikes!*

*Try to think of as many different things that each sound made you think of and then write them out.*

**Recording** – The children will have the opportunity to record some sounds using digital recorders in the classroom or outside the school that they think are interesting. If digital recorders are not available other devices such as mobile phones or tablets could be used. Below are some suggestions for how to organise this exercise:

- It is good to collect a variety of sounds and to teach the children a little about recording technique. For example, if the recorder is held close to the sound it will record at a higher level. Also, how

might the recording change if recorded from different directions or angles? It is interesting to experiment with this to get different results.

- It is also important to explain that recorders will pick up all the sound around them and that background noises should be minimised.
- It is a good idea to use headphones with the recorders in order for the children to listen carefully to what is being recorded and hear how the position of the recorder can affect the sound.
- Depending on how many recorders are available recording can be done in small groups or with the whole class.
- For example, it works well to get some children to make different sounds out of objects such as paper while others record them. With enough children and paper you could even create a paper orchestra!
- A soundbank is also available from the researcher who can be contacted by emailing [dholland@dmu.ac.uk](mailto:dholland@dmu.ac.uk) or [kipdave@hotmail.co.uk](mailto:kipdave@hotmail.co.uk). This means there is no pressure to record a wide range of sounds of good quality, but the recording process can be a valuable experience for the children in using technology creatively and is also a chance for them to put their listening skills into practice. When recording they are required to make choices about what sounds they would like to record for use in their compositions and what sounds might work well together. Therefore even though a soundbank is available it is still

recommended that the recording exercise is included in the workshops.

- Enabling the children to record some sounds means that some of the material they are working with is unique and will have personal meaning to them as they are using sounds from their own environment. Voice sounds are good to record as children enjoy hearing and manipulating them and they will also have personal resonance.
- Audio files should then be put into a folder that the children can access and import into an audio editor such as Audacity (see Appendix B).

### **Workshop 3**

Through participating in this workshop the pupils will:

- Be introduced to the concept of creating music using sounds rather than notes.
- Learn simple audio processing techniques using audio editing software.

Resources needed:

- Computers
- Headphones
- Audio editor (e.g. Audacity)



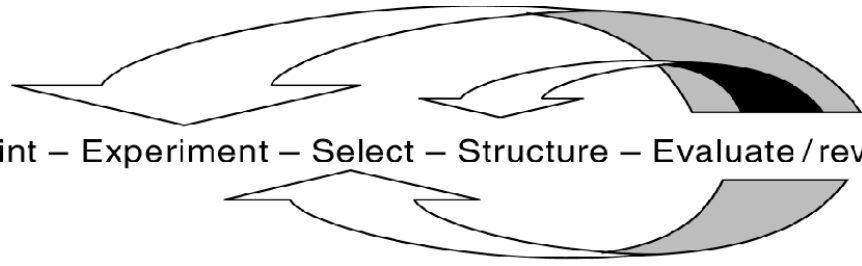
**Listen to short examples by Sound-based composers e.g. Hildegard Westerkamp - Kits Beach Soundwalk (KBS) or Cricket Voice (see useful links).**

This is intended to introduce the pupils to the idea of making music with sounds. Using the term 'music' too early in the workshops could potentially lead to some confusion and even resistance. Therefore, it might be better to introduce this after they have developed some appreciation of listening to environmental sounds and their different qualities. Earlier in the workshops reference could be made to creating art from sounds rather than using the term music.

**Sound experimentation and simple processing** - For the remainder of the workshop the pupils will choose sounds to experiment with using an audio editor such as Audacity. Editing techniques should be demonstrated as well as learning how to loop sounds and using simple processing techniques such as *reverb\** or *delay\**.

The Audacity instruction sheets in Appendix B give an introduction for doing this.

Once these basics have been introduced the children should be allowed freedom to play and experiment with the sounds. This allows the pupils to engage with the experience and also trigger new ideas for compositions. It is recommended that when composing their sound pieces over the course of the workshops the following framework (devised by Savage and Challis, 2002) is used.



Starting point – Experiment – Select – Structure – Evaluate / revise

This divides the composition process into 5 stages. The children start with recordings, which they then experiment with. They then select the sounds they want to include in their composition and structure them into a piece (see workshop 4 for ideas about how to structure pieces). Finally, they will evaluate the success of this and make revisions. The children can loop back to other stages to make changes, so this is not a linear process but a recursive one and all the stages can be characterised by a sense of play and experimentation.

## **Workshop 4**

Through participating in this workshop the pupils will:

- Further develop their audio processing and editing skills by continuing to experiment with sounds.
- Learn to formulate ideas for compositional structures by reviewing and selecting sounds in reference to ideas for themes or narratives or just through experimentation with the sounds.

**Further experimentation and begin to structure** - They will further experiment with editing the sounds provided. Their compositions should last between one and two minutes and should

include up to 6 sounds. The teacher and assistants can move round each group helping them develop their ideas by giving advice.

### **A few ideas for structuring pieces**

Below are a few ideas for generating ideas for arranging sound-based compositions. For many more ideas see the book 'Making Music with Sounds' by Leigh Landy (2012).

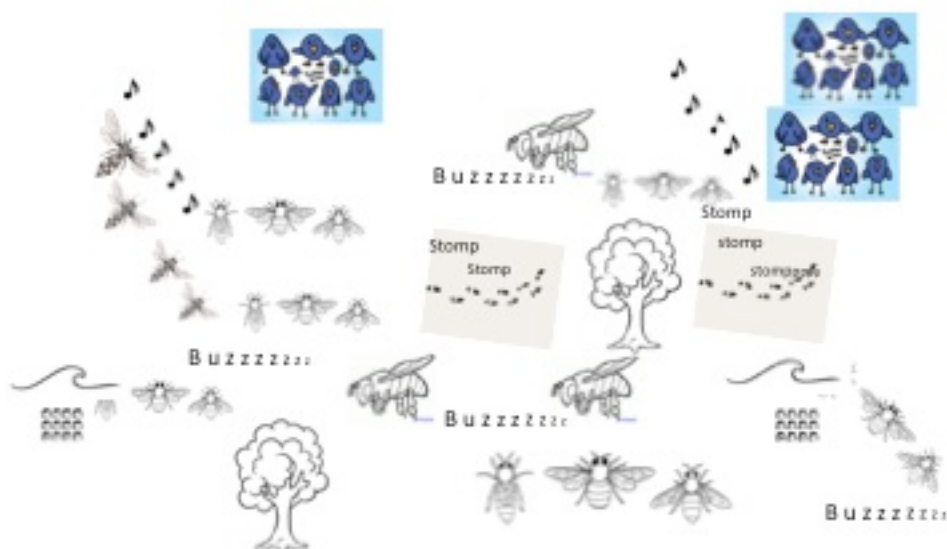
- Sounds can be sequenced in line with narratives but attention should also be given to the properties of the sounds. Children should be encouraged to think if the sounds work well together.
- Often sounds with similar characteristics can complement each other but it also good to use contrast. For example, contrast sounds with short durations such as footsteps with sounds of longer durations such as the hum of traffic or sounds that have been stretched (for example using Paulstretch in Audacity - see Appendix B).
- Using the reverse effect is a good way of creating tension and release. For example, sounds with a quick attack and long sustain (such as a piano) can be reversed resulting in a gradual build up to a climax. At this point of climax it can be interesting to introduce a new sound that can appear to have been triggered by the climax.
- Additionally, simple rhythms can also be created by looping sounds (repeating the sound a number of times), for example the sound of footsteps around the school could be used for this. Such sounds can be edited to create new rhythms. The most important thing is to keep experimenting, allow the children freedom to

follow their own ideas. There is not necessarily a right or wrong way of creating a sound composition.

### Creating a plan or score

The structures are best developed by creating a score or plan based around a timeline and could involve writing, diagrams or drawings. This can be based on themes or narratives or can just evolve through experimentation with sounds or use a mixture of both. Themes or stories do not need to include a linear narrative; they could be connected to a feeling, emotion or other experience and might unfold in a more dreamlike way than a straightforward story.

An example of a simple graphic score is given below. This is just an example, such a score can come in many forms and pupils should be encouraged to develop one in line with their individual interests and abilities.



**Summer dream** – I walk on the rocks and through the woods near a beach, where I can hear children laughing..... Strangely.....

## **Workshop 5**

Through participating in this workshop the pupils will:

- Continue to develop processing skills by experimenting with sounds chosen in workshop 4.
- Further learn how to develop structures for their compositions in relation to plans that they have created.

In this workshop the pupils will continue to arrange and revise their compositions working in a similar way to the previous workshop with help from the teacher and assistants.

## **Workshop 6**

Through participating in this workshop the pupils will:

- Develop compositional skills by continuing to arrange, revise and refine their compositions.

If time allows the children could create Wordle (see <http://www.wordle.net/>) documents that explain the theme of the pieces or describe the sounds and their feelings about their compositions.

**Homework** – *Write a short letter to yourself explaining how you made your sound piece and how you felt about the experience (see Wolf, 2013).*

## **Workshop 7**

Through participating in this workshop the pupils will:

- Develop communication and listening skills through the presentation of each composition to the rest of the class and through the giving and receiving of feedback.
- To develop written communication and reflective skills through completing questionnaires concerning participants experience of the workshops.

## **Concert**

The final workshop will be a chance for the children to play their compositions to the rest of the class. They will each describe their pieces in relation to themes or narratives or just what types of effects they used. The pupils will be encouraged to reflect on the success of their pieces and receive feedback from the rest of the class.

**Final Discussion and questions** – A final chance for the participants to voice their thoughts and feelings about the workshops as well as ask any questions they might have.

## **Glossary**

**Heightened listening** - Heightened listening is a term that describes a close concentration on the details of sound, but it is also a raised aural awareness that allows imaginative associations and connections that go beyond the sound itself.

**Internalised listening** – Many composers who make soundscape music advocate a type of listening that uses the imagination. The composer Hildegard Westerkamp argues that listening is a creative act and that soundscape compositions create 'a place of balance between inner and outer worlds, reality and imagination' (Westerkamp, 1999).

This expands the imaginative aspects of heightened listening by enabling listeners to subjectively interpret sounds in relation to their own experiences. It involves an imaginative creative listening that goes beyond merely identifying the sound. By internalising the initial listening experience a listener can explore how this might resonate with their personal experiences and feelings.

**Delay** – This is where a sound is repeated or looped and these repeats can be altered for example in terms of timing, volume, pitch and number.

**Reverberation** – This is the result of multiple reflections of a sound wave (EARS) and is more noticeable in large enclosed spaces (e.g. churches, halls) where it will take longer for those reflections to die away. Artificial reverb is used widely for recording and performing and there are many software applications available.

**Sound-based music** - An umbrella term, created by Leigh Landy, to describe music where sound is the basic unit, rather than the musical note (Landy, 2007).

**Soundscape** – A type of sound-based music that uses field recordings of particular locations.

**Soundwalk** – Hildegard Westerkamp describes soundwalks as ‘any excursion whose main purpose is listening to the environment. It is exposing our ears to every sound around us no matter where we are’ (Westerkamp, 2001). She has long used soundwalks as part of workshops whereby participants are asked to focus on particular aspects such as the sounds of the body, nearby sounds, the quietest sounds or something specific such as the wind and how many different sounds it creates (Westerkamp, 2001). Soundwalking is an activity that invites participation, can help us learn about our relationship with our environment or as Westerkamp points out ‘can simply be fun’ (Westerkamp, 2001). For these reasons, it can be an effective educational tool.

## **Useful links**

EARS; Electroacoustic Resource Site - <http://www.ears.dmu.ac.uk/spip.php>

EARS2 – this is resource specifically aimed at teachers and pupils to learn about all aspects of sound-based music -

<http://ears2.dmu.ac.uk/about/>



Excerpts of pieces by Hildegard Westerkamp such as KBS or Cricket Voice can be heard here - [http://www.electrocd.com/en/cat/imed\\_1031/](http://www.electrocd.com/en/cat/imed_1031/)

Sound and Music - <http://soundandmusic.org/>

World Forum for Acoustic Ecology Library – Contains useful information and a number of educational resources in relation to soundscape studies. <http://wfae.proscenia.net/videos/index.html>

## *Appendix B - Audacity instruction sheet*

### **Audacity Basics**

**Audacity can be downloaded for free from**  
<http://www.audacityteam.org/>

**A manual with tutorials is available from**  
<http://manual.audacityteam.org/>

**Below is a brief and simple introduction.**

**Once installed double click on the ICON for Audacity (see below) in the programs folder.**



A welcome to Audacity box will appear, click OK.

**To put a sound into Audacity** go to File (top lefthand corner), then Import, then Audio.

Choose an audio file from the soundbank folders and then click open. A box will appear asking whether you want to copy the file, make sure this option is selected then click OK.

You will then be able to see the sound in Audacity, something like this:



The sound is represented as a waveform in a track in Audacity. This waveform shows the amplitude of the sound and how it changes over time. If you import another sound this will be included on a separate track below the one previously imported. If you wish you can also create a blank track that you can move other sounds into in order to arrange and sequence them. To do this go to Tracks, Add New and Audio track (mono) or stereo track.

## TOOLS



**Selection Tool** – click on this tool if you want to select a sound or put the cursor in a particular place.

You will find it in the top left of the screen. Use it to click at the place you want the sound to start playing, or click and drag to select part of a sound. You can also use select to delete all or part of a sound by selecting it and pressing return or delete on your keyboard.



**Time-shift tool** – click on this tool if you want to move a sound, then click and drag the sound to move it around the track or between tracks.

## EFFECTS

In order to apply an effect select the sound or section of the sound that you wish to add the effect to and go the effects menu (at the top of the screen) where you will find a range of effects. Below are some simple effects that you can find in the menu which are interesting to start experimenting with.

**Repeat** - this makes a sound play more than once. To do this select (using the selection tool) the sound you want to repeat. Then click on **Effect** (in the bar at the top of the screen) then in the menu click on **Repeat**. In the box put the number of times you want it to repeat. This is useful for creating loops.

**Reverse** – this makes a sound play backwards. To do this select (using the selection tool) the sound you want to reverse. Then click on **Effect** (at the top of the screen) then in the menu click on **Reverse**.

**Delay** – this will cause the sound to repeat but these repeats can be altered in terms of volume, timing, pitch and number of repeats.

**Paul stretch** – this will lengthen the sound by extreme amounts without changing its pitch.

**Change speed** – this will change the speed of a sound (you can either speed it up or slow it down). It's like changing the speed on a record player by changing the rpm but with more control over the choice of speed. It has the effect of altering the tempo, pitch and frequency content.

## SHORTCUTS

To **play** a sound press the **space bar**. The sound will play from where you click on the track. If only part of a sound is selected, only that part will play.

To **stop** a sound also press the **space bar**.

Press **ctrl + C** to copy part of a sound (first select it).

Press **ctrl + V** to paste the sound somewhere else.

Press **ctrl + Z** to undo if you make a mistake.

### To save an Audacity project

Go to File, Save project and click Ok on the warning box.

Then in the box that appears choose the folder in which you want to save it and give your project a name (for example 'Dave's sound project'), then click save. This will be saved as *Dave's sound project.aup* and will have the audacity icon next to it.

### To open your Audacity project

Go to file, open and click on the file you saved with the Audacity icon (not the data folder).

**Appendix C: Examples of Completed Soundwalk Instruction sheets**

**Soundwalk**

What do you hear? *Cars driving through puddles.*

Lead your ears away from these sounds and listen beyond ... into the distance

*discussing*

*Pencils Writing*

What else do you hear?  
I hear the wind brushing against the trees

What else?  
*Water dripping*

What else?  
clothes rubbing and swaying against each other

*my keys rattling*

*door slamming*

*coats rattling*

*People walking gently.*

Which sounds are the **LOUDEST**?

*People chatting*

*shoes tapping on the ground*

Which are the quietest?

*trees*

*beeping*

*chairs scraping*

Are they or in **HIGH** **LOW** pitch?

*laughing*

*swaying*

*garage door*

*People scuffing shoes*

Which sounds would you keep? 😊  
I would keep the sound of the breeze brushing against the trees, the sound of breathing.

Which sounds would you scrap? ☹️  
The sound of the door slamming

Beeping of the pin  
**Soundwalk**

What do you hear?

chairs moving  
Miss + shoes

Lead your ears away from these sounds and listen beyond ...  
into the distance

dinner / ai des  
Seet

scraping  
Birds  
coughing  
wind  
doors slamming

Andre running  
misc h talking

What else do you hear?

foot steps  
Wend brushing of our coats  
Paper swishing

What else?

Straples  
Pen dropping  
breathng  
leaves  
trees  
Pencil moving  
on paper.

What else?  
Craplains  
Cars  
door closing

chatting  
Toilets  
Sushana

Which sounds are the **LOUDEST**?

Craplain  
Cars  
Toans  
Shoes  
Writing  
Mumps  
Chairs pulling  
(out and in)

Which are the quietest?

leaves

Splashing of  
Puddles when  
wacin in it

Are they **HIGH** or in **LOW** pitch?  
both

Which sounds would you keep? ☺

Craplain  
paper swishing

People sitting on bench  
(squeaky)

Which sounds would you scrap? ☹

Feetling

Tim running

coats  
comin of  
(loudly)

## Appendix D: Examples of Completed Questionnaires

### Listening workshops questionnaire

**NAME:** Kornelia

1) What did you like about doing these workshops? ☺

I liked that we could go outside to listen to nature, walking round the school.

L

2) What did you not like? ☹

I didn't like nothing.

X

3) Do you think the listening practice helped you to create your sound stories?  Yes  No (please circle)

If yes, why? If no, why not?

I think it did because it helped us have a theme, what sort of story would it be.

N

4) Would you like to make a sound story again in the future?

Yes  No (please circle)

If yes, why? If no, why not?

I would like to make another sound story because it was fun also we could explore around.

F

## Listening workshops questionnaire

NAME: CHARLOTTE

1) What did you like about doing these workshops? ☺

I liked using Audacity to create a story which meant something to me

2) What did you not like? ☹

People talking too much !!!

3) Do you think the listening practice helped you to create your sound stories?  Yes /  No (please circle)

If yes, why? If no, why not?

Made me listen more think what is around me I never realised happen!

4) Would you like to make a sound story again in the future?

Yes /  No (please circle)

If yes, why? If no, why not?

Because I really enjoyed making them something to finish, to aspire to!



## ***Appendix E: Participant Information Sheet and Consent Form***

### **Participant Information Sheet**

#### **Heightened listening and composition workshops**

The following text gives an overview of the content of workshops where pupils will be guided in creating their own sound compositions. Each session will last approximately 1 hour.

The workshop will involve the following -

- Participation in listening exercises to help develop aural awareness
- Recording environmental sounds while participating in soundwalks (where participants walk through an area listening closely to the environment)
- Composition of sound pieces using recorded sound materials
- The completion of written exercises and qualitative questionnaires

#### ***Information about the project***

##### **The Research Project**

The project will investigate whether heightened listening skills (a detailed, attentive type of listening, similar to that often associated with the blind) can be learnt by young people and used as an aid for creating sound-based compositions (i.e. compositions using sounds rather than musical notes).

This project aims to develop students' aural (listening) skills through participation in different exercises such as soundwalks where the students will be able to record sounds that they can later use in compositions. Some of these compositions will be hosted on a dedicated SoundCloud page, which will also include remixes of the work produced by the researcher.

Please note that workshop discussions may be recorded. However, the recordings will not be released with the research data. Participant data (which will be anonymous) may be used in research-based publications and talks.

In accordance with De Montfort University's policy on human research ethics, your rights to privacy and confidentiality in relation to any material and practices arising from the research will be protected.

David Holland  
(Project Researcher)

If you require further information please contact:

Researcher: David Holland ([kipdave@hotmail.co.uk](mailto:kipdave@hotmail.co.uk))

Research Supervisor: Prof. Leigh Landy ([llandy@dmu.ac.uk](mailto:llandy@dmu.ac.uk))

### **Research Consent Form**

Thank you for agreeing to allow your School and students to participate in this research project, which has been approved by De Montfort University's Faculty of Humanities' Human Research Ethics Committee.

In accordance with De Montfort University's policy on human research ethics, I should like to point out that your student's rights to privacy and confidentiality in relation to any material and practices arising from the research will be protected and their identities will not be revealed. You will also therefore, be:

- Provided with written details of the objectives of the research and of your student's participation in it (see first page)
- Invited to give your written consent, by countersigning and returning this letter, regarding your student's voluntary participation in the research
- Free to withdraw from the research at any point without having to offer any reasons for doing so
- Given the right to see any written or audio records relating to your student's involvement in the research
- Fully protected in regard to safety according to De Montfort University's best practice on risk assessment

Yours sincerely,

David Holland  
(Project Researcher)

Please sign this consent form to indicate that:

(a) you and your students understand the objectives of the research and their involvement in it;

(b) you and your students give consent for the voluntary participation of your students in the research;

(c) you and your students consent to the hosting of a selection of their sound recordings on a SoundCloud page which will be password protected and

accessible to the school and students; and

(d) you and your students consent to allowing me to remix their sound recordings with other sounds and hosting the remix on SoundCloud.

As the participants are minors, a signature is *required*. Please provide this consent as Head on behalf of your School and your students,

..... (Signature)

.....(Name)

Head

.....(Name of School)

..... (Date)

Researcher: David Holland ([kipdave@hotmail.co.uk](mailto:kipdave@hotmail.co.uk))

Supervisor: Prof. Leigh Landy ([llandy@dmu.ac.uk](mailto:llandy@dmu.ac.uk))

Chair of the Faculty Human Research **Ethics** Committee: Prof. Bernd Carsten Stahl ([bstahl@dmu.ac.uk](mailto:bstahl@dmu.ac.uk))

## ***Appendix F: Observation Sheet Templates***

### **Observation – Workshop 1**

**Workshop aims:**

- Give the pupils an overview of what the workshops will involve.
- Introduce the pupils to simple listening exercises.
- Participate in a soundwalk in the local area.
- Discuss and reflect on the sounds encountered during the walk.

**School:**

**Information about the school**

**Year:**

**Number of students present:**

**Male/female:**

**Learning difficulties/disabilities:**

**Set up/ lay out of room/seating arrangements:**

**Date:**

**Time of day:**

<b>1</b>	<b>Listening Exercise – responses and reactions</b>
<b>For example:</b> <i>Who is taking part? Non-verbal reactions? Any disruptions? Level of engagement?</i>	
<b>Comments:</b>	

<b>2</b>	<b>Sound lists and discussion</b>
<b>For example:</b> <i>Does everyone make lists? Who speaks and what do they say? Does everyone participate? How many sounds do they notice? Which sounds?</i>	
<b>Comments:</b>	
<b>3</b>	<b>Soundwalk</b>
<b>For example:</b> <i>How are they responding to different sounds? Are they talking? Are they concentrating? What non-verbal communication is there?</i>	
<b>Comments:</b>	
<b>4</b>	<b>Discussion after soundwalk</b>
<b>For example:</b> <i>How do they respond? Negatively? Positively? What do they say? What sounds do they mention? What associations do they have with the sounds? Who talks? How much do they write in their journals?</i>	
<b>Comments:</b>	
<b>5</b>	<b>General thoughts and reflections</b>
<b>For example:</b> <i>Overall impressions? Which activities did the participants most engage with? What problems were there? Any themes or ideas emerging that could be investigated further? What feelings were expressed by participants in relation to the workshop? Did they appear to clearly understand the purpose of the activities? How did the location/space influence the workshop? Did the teacher explain things clearly? Did the teacher appear comfortable with the material?</i>	
<b>Comments:</b>	

## Observation Template – Workshop 2

**Workshop aims:**

- To record any interesting sounds the children discover in the school.
- To encourage a reflective listening that uses the imagination through discussion/written exercises.

**School:**

**Year:**

**Number of students present:**

**Set up/ lay out of room/seating arrangements:**

**Time of day:**

**Date:**

<b>1</b>	<b>Recap / Introduction</b>
<p><b>For example:</b>  <i>Who is taking part?</i>  <i>Non-verbal reactions?</i>  <i>Any disruptions? Level of engagement?</i></p>	
<p><b>Comments:</b></p>	
<b>2</b>	<b>Written exercise</b>
<p><b>For example:</b>  <i>Does this seem to be an easy or difficult task? Are they engaged? Do they identify sounds they think are interesting and that spark ideas? Are they more interested in writing poetry, stories or drawings?</i></p>	
<p><b>Comments:</b></p>	
<b>3</b>	<b>Recording - Demonstration</b>
<p><b>For example:</b>  <i>How do they respond? Are they interested?</i></p>	
<p><b>Comments:</b></p>	
<b>4</b>	<b>Recording</b>
<p><b>For example:</b>  <i>How do they respond? Are they engaged? What sounds do they record? Do they work together?</i></p>	

Comments:	
<b>6</b>	
<p><b>For example:</b>  <i>Overall impressions? Which activities did the participants most engage with? What problems were there? Any themes or ideas emerging that could be investigated further? What feelings were expressed by participants in relation to the workshop? Did they appear to clearly understand the purpose of the activities? How did the location/space influence the workshop? Did the teacher appear comfortable with the material?</i></p>	
Comments:	





<b>4</b>	<b>General thoughts and reflections</b>
<p><b>For example:</b> <i>Overall impressions? Which activities did the participants most engage with? What problems were there? Any themes or ideas emerging that could be investigated further? What feelings were expressed by participants in relation to the workshop? Did they appear to clearly understand the purpose of the activities? How did the location/space influence the workshop? Did the teacher appear comfortable with the material?</i></p>	
<p>Comments:</p>	

## Observation – Workshop 4

### Workshop aims:

- To begin to choose sounds that will form the basis of the compositions.
- To continue developing ideas through audio processing and editing.

School:

Year:

Number of students present:

Set up/ lay out of room/seating arrangements:

Time of day:

Date:

<b>1</b>	<b>Sound box exercise</b>
<b>For example:</b> <i>How easy is this task? Are they engaged with the idea?</i>	
Comments:	
<b>2</b>	<b>Editing and processing</b>
<i>Does this seem to be an easy or difficult task? Are they engaged? Do they create interesting results? Are they pleased with the results?</i>	
Comments:	
<b>3</b>	<b>General thoughts and reflections</b>
<b>For example:</b> <i>Overall impressions? Which activities did the participants most engage with? What problems were there? Any themes or ideas emerging that could be investigated further? What feelings were expressed by participants in relation to the workshop? Did they appear to clearly understand the purpose of the activities? How did the location/space influence the workshop? Did the teacher appear comfortable with the material?</i>	
Comments:	

## Observation Template – Workshop 5

### Workshop aims:

- To develop the narratives for their sound stories
- To develop their compositions using audio processing and editing skills.

**School:**

**Year:**

**Number of students present:**

**Set up/ lay out of room/seating arrangements:**

**Time of day:**

**Date:**

<b>1</b>	<b>Developing narratives</b>
<i>How easy is this task? Do they manage to create a short piece with a narrative of some sort? Are they engaged with the idea?</i>	
Comments:	
<b>2</b>	<b>Composition work</b>
<b>For example:</b> <i>Does this seem to be an easy or difficult task? Are they engaged? Do they create interesting results? Are they pleased with the results?</i>	
Comments:	
<b>3</b>	<b>General thoughts and reflections</b>
<b>For example:</b> <i>Overall impressions? What problems were there? Any themes or ideas emerging that could be investigated further?</i>	
Comments:	

## Observation Template – Workshop 6

### Workshop aims:

- To continue to arrange, revise and refine compositions.
- To do this using audio processing and editing skills they have learnt in previous weeks.

**School:**

**Year:**

**Number of students present:**

**Set up/ lay out of room/seating arrangements:**

**Time of day:**

**Date:**

<b>1</b>	<b>Composition task</b>
<b>For example:</b> <i>Does this seem to be an easy or difficult task? Are they engaged? Do they create interesting results? Are they pleased with the results?</i>	
Comments:	
<b>2</b>	<b>Forming a narrative</b>
<i>How easy is this task? Do they manage to create a short piece with a narrative of some sort? Are they engaged with the idea?</i>	
Comments:	
<b>3</b>	<b>General thoughts and reflections</b>
<b>For example:</b> <i>Overall impressions? What problems were there? Any themes or ideas emerging that could be investigated further?</i>	
Comments:	

## Observation Template – Workshop 7

### Workshop aims:

- To complete questionnaires concerning their experience of the workshops.
- To complete their compositions.
- To listen to each others work.

**Year:**    **Number of students present:**

**Set up/ lay out of room/seating arrangements:**

**Date:**            **Time of day:**

<b>1</b>	<b>Questionnaire</b>
<b>For example:</b> <i>Does this seem to be an easy or difficult task? Do they concentrate?</i>	
<b>Comments:</b>	
<b>2</b>	<b>Finishing compositions</b>
<i>Do they make progress? Do they manage to create a short piece with a narrative of some sort?</i>	
<b>Comments:</b>	
<b>3</b>	<b>General thoughts and reflections</b>
<b>For example:</b> <i>Overall impressions? What problems were there? Any themes or ideas emerging that could be investigated further?</i>	
<b>Comments:</b>	

## ***Appendix G: Example of Completed Observation Sheet***

### **Observation – School G - Workshop 1**

#### **Workshop aims:**

- Give the pupils an overview of what the workshops will involve.
- Introduce the pupils to simple listening exercises.
- Participate in a soundwalk in the local area.
- Discuss and reflect on the sounds encountered during the walk.

#### **School: School G**

(Information about the school taken from an inspection report made by the Diocesan Education Service in 2013). It is a catholic, smaller than average primary school serving an area with some social deprivation, 20% of pupils come from an ethnic minority. The number of pupils eligible for free school meals (48%) is well above the national average.

#### **Year: 6**

#### **Number of students present: 22**

#### **Male/female: Fairly equal**

**Learning difficulties/disabilities:** TA present to assist one boy. Need to clarify exactly what difficulties the boy has, the teacher said he gets over excited and talkative when they have visitors, although this was certainly not apparent during this workshop.

**Set up/ lay out of room/seating arrangements:** Spacious long rectangular room with plenty of natural light from 2 large windows. Children were sat behind tables in rows apart from one table at back with 4 children sat round it.

**Date:** 07/01/15

**Time of day:** 1pm

<b>1</b>	<b>Listening Exercise – responses and reactions</b>
<b>For example:</b> <i>Who is taking part? Non-verbal reactions? Any disruptions? Level of engagement?</i>	
<b>Comments:</b> I started by asking for their favourite sounds, this usually works well as an icebreaker and they were all keen to contribute. There were a number of interesting examples such as cutting through iceberg lettuce and walking on crunchy snow. One girl said she liked silence best, which I said was interesting as we would be talking about that later (in relation to the next exercise). It was	

useful as they all had sticks (like ice lolly sticks) with their names written on in front of them, usually I just ask their names, but this made it easier. I have considered asking previous groups to make nametags but decided it could take up too much time when time is limited.

Next, as usual, I asked them to try to sit down without making any sound. As usual a number of them claimed to have managed this. This provoked quite an interesting discussion about whether it could be possible, some of them were quick to point out that there will always be sound from the body as it's moving, which led to discussion about whether it was possible to have complete silence. I was impressed with how quickly they picked up on this, as they decided this without really being prompted, which hasn't happened before. I described the John Cage anechoic chamber story as simply as I could and one of them suggested it would be possible to have silence if the person was deaf, but it was pointed out there would still be sound it's just that the person wouldn't hear it. One girl then asked, what if you left the room and turned everything off in there? Then there might be no sound as there would be no sound from the body or equipment, but I think we agreed that if that were possible there would be no one there to experience it. This is the first time this has provoked quite such a lively and philosophical discussion, it was pleasing that they were so engaged and interested! I think it successfully illustrated to them that there are many quiet sounds that we often don't pay attention to.

We next tried the main listening exercise after opening windows to let in sounds from outside. I started by asking them to take some slow deep breaths and get comfortable, they then seemed quite relaxed. Most of them happily closed their eyes for the full minute and there was no talking, whispering or giggling at all, which is unusual. The room was fairly quiet with a few extra sounds drifting in from outside.

## **2** | **Sound lists and discussion**

### **For example:**

*Does everyone make lists? Who speaks and what do they say? Does everyone participate? How many sounds do they notice? Which sounds?*

### **Comments:**

They all wrote out listening lists, this took quite a while as they seemed to be thinking quite hard about it. One girl has an arm in a sling and so the teacher helped her to write her list. We then compiled an overall list of 23 sounds. They all appeared keen to offer sounds; there was quite a variety and also discussion about whether one sound had actually happened (a boy claimed he heard a scream from somewhere). The list included breathing, trees rustling, cars and lorries, heartbeats, the radiator and the clock ticking. That we managed to compile a list of 23 sounds from a minutes listening helped to reinforce what I had been saying in the introduction. I drew their attention to this by saying it demonstrated that there are many sounds around that we often don't notice.

<b>3</b>	<b>Soundwalk</b>
<b>For example:</b> <i>How are they responding to different sounds? Are they talking? Are they concentrating? What non-verbal communication is there?</i>	
<b>Comments:</b> I explained the instructions on the soundwalk sheet and then the rules (no talking and walk slowly), which the teacher helpfully emphasised. It was a slightly drizzly afternoon but the teacher was keen to take them outside as well as inside the school. They were exceptionally well behaved, with hardly a whisper for the whole walk. They pointed sounds out to each other, and most of them busily wrote down what they could hear. I was slightly concerned that all that was audible outside was traffic, but when we went round the back of the school it was possible to hear birdsong and wind chimes from nearby gardens, as well as other sounds such as a creaking garage. The school seems quite sound proof, it doesn't have the open plan classrooms I've encountered in some other schools, so it was relatively quiet when we walked through it, but there were a number of quieter sounds that were not masked as a result. The soundwalk was longer than I expected (over 20 minutes), I had asked the teacher to lead it beforehand and had suggested 10-15 minutes, but I think she felt they would be able to concentrate for longer and they didn't seem to get distracted. This demonstrates the value of a teachers contribution, as she was obviously much more able to make this judgment about her class than I would be.	
<b>4</b>	<b>Discussion after soundwalk</b>
<b>For example:</b> <i>How do they respond? Negatively? Positively? What do they say? What sounds do they mention? Who talks?</i>	
When we returned to the classroom we made lists on the board of the different categories of sounds they had heard. They offered plenty of suggestions, although there was a little bit of confusion with distinguishing between the categories. For example, one girl mentioned a pen clicking as a loud sound and a boy said teeth chattering was a low pitched sound, but I think by the end they understood the general idea. There were generally 6 or 7 of them who kept putting their hands up to offer suggestions, but overall most of them were keen to contribute. By the end of this they seemed to be getting tired, but we did overrun by about 20 minutes, the teacher was fine with this as the next lesson was with her in the same room. We managed to create reasonable lists for each category and I wrapped up by setting them homework, which I had previously agreed with the teacher. I asked them to produce a piece of writing in which they would describe interesting sounds that they heard over the next week and to put those sounds in different categories by thinking about their characteristics. I then asked them to write a few sentences about what the sounds reminded them of. I gave the example of the sound of a bee and asked what that could remind someone of and straight away a boy said 'honey'. I was surprised at how quickly they seemed to understand this. I usually start the second workshop with this written exercise and some of them tend to struggle with it or it usually takes a while for them to understand. The teacher said she would put this homework on	



a sheet for them to remember.

**5 | General thoughts and reflections**

**For example:**

*Overall impressions? Which activities did the participants most engage with? What problems were there? Any themes or ideas emerging that could be investigated further? What feelings were expressed by participants in relation to the workshop? Did they appear to clearly understand the purpose of the activities? How did the location/space influence the workshop? Did the teacher explain things clearly? Did the teacher appear comfortable with the material?*

**Comments:**

I was very pleased with how the workshop went. The children were very well behaved, bright and engaged. The teacher is helpful, supportive, enthusiastic and good at behaviour management. She is also a classically trained musician and keen on introducing more musical opportunities into the school, as currently there are relatively few. It is useful that the lesson is straight after lunchtime as we can overrun a little if necessary, I haven't had this flexibility in any previous schools. The teacher seemed very happy with the lesson and the children seem excited about the prospect of recording sounds next week and were asking questions about the microphone I used to record the soundwalk.

The children were mainly seated in rows facing the front, this is the first time I've been in a school with this seating arrangement and it was interesting that they were less distracted and liable to chat amongst themselves than probably in any other school I've visited. Of course there might be other reasons for this, the school has a warm, relaxed atmosphere and the teacher clearly has a good relationship with the class, but it is interesting to note the seating arrangements. The homework arrangement is very positive, as it encourages them to keep listening and reflecting outside of the lessons and will take the pressure off activities within the workshops. It also means we can focus the majority of the next session on recording. So far this has been very positive, hopefully it will continue to be! The school has laptops and most of them will need to work in pairs when we start using Audacity (which is already installed). These have already been booked for the weeks where we need them and there is a shared school drive where they can save and access their work, so there hopefully won't be any issues in this area.

## *Appendix H: School Sound Boxes*

### *1. School C*

<b><i>Sound folders</i></b>	<b><i>Sounds</i></b>	<b><i>Like? ☺</i></b>	<b><i>Dislike? ☹</i></b>
<b>Around school</b>	Children with music		
	Door close		
	Soundwalk traffic		
	Rolling pencils		
<b>Leaves/footsteps</b>	Footsteps inside		
	Footsteps inside – teacher		
	Leaves		
	Running over leaves		
<b>Paper/writing</b>	Paper screwed up		
	Paper tearing		
	Pencil writing		
	Squeaky pen		
<b>Piano/drums</b>	Slide across notes		
	Drums		
	Piano strings ring		
	Piano low notes		
<b>Voices</b>	Can you hear me?		
	Écouter		
	Hellos		
	Listen (Gujarat)		
	Listen (group)		

	Laugh		
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**2. School D**

<b>Sound folder</b>	<b>Sound</b>	<b>Like?</b> ☺	<b>Dislike?</b> ☹
<b>Footsteps</b>	Footsteps and ball bounce		
	Footsteps in hall		
	Footsteps outside		
<b>Outside</b>	Going outside		
	Playground footsteps and laughter		
	Playground footsteps and screams		
	Playground voices and whistle		
	Playground voices		
	Traffic		
	Whistle		
<b>Other sounds</b>	Book pages		
	Chain		
	Clap		
	Class laughing		
	Classroom furniture		
	Classroom sounds		
	Door open		
	Exercises		
	Paper		
	Pencil sharpen		
	Pencil tap		
	Piano strings		
	Rattle		
	Scissors		
	Scribble		
	Sellotape		
Shake			
Shaker2			
	Squeaky pen		
<b>Voices</b>	I can hear you		
	Laugh		
	Laugh2		
	Listen Mr. Brown		
	Listen		
	Listen Carefully		
	Scream		

### 3. School E

<b>Folder</b>	<b>Sound</b>	<b>Like?</b> ☺	<b>Dislike?</b> ☹
<b>General</b>	Clapping		
	Cup pencil case rhythm		
	Distant screams		
	Distant whistle		
	Door closing footsteps		
	Foot brush		
	Footsteps on stairs		
	Footsteps outside		
	Glass roll		
	Loud paper tear		
	Paper shake		
	Pencil rolls		
	Plastic		
	Playing outside		
	Rips		
	Shake 2		
	Shake 3		
	Sound of lesson		
	Traffic		
	Water		
Zip			
<b>Voices</b>	Hello 1		
	Hellos		
	I hear you		
	Let's go		

	Sambha!		
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**4. School G**

<b>Sounds</b>	<b>Like?</b> ☺	<b>Dislike?</b> ☹
Bell		
Bouncing balls		
Footsteps fast		
Footsteps		
Hello		
Laughing wow		
Listen		
Metal		
Outer space		
Outside / birdsong		
Paper 1		
Paper 2		
Paper 3		
Piano		
Scraping		
Skids		
Swing		

## **Appendix I: Teacher Feedback**

### **School A**

*The children enjoyed the activities, although it took some time to become conversant with the technology.*

*We found that the recording activity was more effective when the children are in small groups. I would suggest no more than 6. This is because they find it difficult to remain quiet, especially when they have an interesting recording device in front of them.*

*There were a few difficulties when it came to downloading the program onto the computer network but this was eventually resolved. I would suggest using smaller groups rather than a whole class.*

*The instructions of course should be explained as one step at a time; ensuring that no one is lost on the way.*

### **School B**

*Good points:*

*I really enjoyed spending some time listening to the sounds around us and getting the children to realise that there is always sound, even if it can sound quiet. The sound walk was also a good experience for the children to see how sounds can change based on location.*

*Working in the ICT suite was very enjoyable for all of the children and they got to grips with the new software quickly. By giving them time to 'play' with the sounds and the software, it enabled them to become more confident in what they were doing and decide which effects and sounds they liked best.*

*The sound stories to accompany the sounds also worked well as the children could be more creative in their writing than in usual lessons at school.*

*Improvement:*

*I believe children should have done their classroom recording and outdoor recording during the sound walk day to speed up the pace of the lessons and also give them more time to edit in the ICT suite.*

*Additionally, it would have been useful to discuss the purpose of the word document before looking at the editing software. It would have been useful to make a table for the children to fill in with the different sounds recorded so children could tick which ones they liked and didn't like (similar to the sounds in class but more official for their sound stories) and this would then have helped them to make more informed decisions about their sound stories.*

*Children's listening:*

*I do think that the sessions have made the children much more aware of the sounds all around them and how they can pin point sounds if they focus. Additionally, I am able to refer to their listening skills more in classroom situations as they are able to think back to their work with you.*

*Overall:*

*The children and I all thoroughly enjoyed working through these sessions from listening carefully to the sounds around us and learning how to use new software in the ICT suite. Thank you again for all of your hard work and for coming to help us with our listening!*

## **School D**

*I know that the children in my class really enjoyed using Audacity. They recently did a class assembly and it was one of the main things which the children wanted to share with the rest of the school. In the assembly they played their pieces after they explained the process and their own stories.*

*They really enjoyed editing and improving their sound stories and were able to tell their story from them. It was frustrating when the computers weren't working but when they were I think that the children's skills of listening were improved. They were able to listen to a sound and think about how to alter it to get the effect they required. I also feel that it was valuable for the children to actually listen to the sounds around them as I believe that children rarely take that time.*

## **School E**

### ***What do you think worked well in the workshops?***

*The chance for the children to actually listen carefully and for them to stop and listen to their surroundings. The sound walk was great! I know they loved using the recording equipment and the editing software.*

### ***What didn't work well?***

*As far as I could see, it was all good! I realise I wasn't there for some sessions but the children were all engaged, sometimes so much they didn't want to stop! They enjoyed listening back to their compositions.*

### ***What do you think the children have gained from taking part in the workshops?***

*Actually hearing things other than themselves chattering on! As you know they are a lively group! Them being able to identify random sounds and thinking about how sounds are made. That even when it is 'quiet' there are still sounds!*

### ***Do you think the listening practice helped the children to become more aware of the sounds around them?***

*Hugely! They find listening difficult and this showed them that there was more going on around them than they had perhaps realised.*

### ***Do you think any of the skills they have learnt in these workshops will be useful in other subjects?***

*ICT skills are always useful. We could use some of the skills in topics around the science area of sound. Using sound recorders, even going on sound walks could all be incorporated into other subject areas.*

### ***Do you have any suggestions for how the workshops could be improved?***

*In terms of content, it was great! With my children, being lively, I think visual modelling of ideas and what to do is important. Perhaps short steps written on the board as reminders for children as to what to do so when they inevitably ask, we can direct them to those rather than having to run around to children! Little things though and possibly would be completely unnecessary with another group!*



## **School F**

### **What do you think worked well in the workshops?**

*I think you communicated what you required from the pupils clearly and gave them very realistic goals that they needed to achieve. The pupils engaged well with the listening tasks and the majority seemed to enjoy the initial process of recording sounds and listening to them back for the first time.*

### **What didn't work well?**

*Through no fault of your own the process of recording on laptops would not be something I would try again. I think your idea of getting them sitting at work stations is a better way of working.*

### **Do you think the listening practice helped the children to make their compositions? If so, in what ways?**

*I think it got them thinking about the concept of using sounds in composition rather than just using proper/real instruments. I think most of the pupils understood the concept of using found sounds rather than using conventional instrumentation.*

### **Do you think it helped them to pay attention and notice the everyday sounds around them?**

*Most of the pupils appeared focused and engaged with the sound walks and listening activities. Most of them were able to identify and describe the sounds that they heard around them.*

### **Do you think any of the skills they have learnt in these workshops will be useful in other subjects?**

*English - for the way they describe sounds*

*Maths - categorising/structuring sounds into sections in the computer software and counting timings*

*ICT - use of computer software*

*Geography - identifying locations and suitable places to hear sounds*

*Art - creative use of sound collage*

### **Do you have any suggestions for how the workshops could be improved?**

*I think your lesson structures worked well and I can't think of anything else I would have changed myself.*

## **School G**

### ***What do you think worked well in the workshops?***

*The children were incredibly engaged in the listening workshops, and became more aware of the sounds around them - they have commented on the background noises they can hear ever since! They also enjoyed the soundwalk, especially when they were able to record sounds. They then loved having to identify the sounds again the next week.*

### ***What didn't work well?***

*We needed a better way of saving the projects, so they don't get lost - but that's more to do with school than the workshops.*

### ***Do you think the listening practice helped the children to make their compositions? If so, in what ways?***

*I don't think they gathered the link themselves - they enjoyed it when it happened, but didn't link it to listening carefully to their compositions to improve it.*

### ***Do you think it helped them to pay attention and notice the everyday sounds around them?***

*Definitely - they've managed to point out sounds they can hear at different points. They even tell me who they can hear talking in assemblies now!*

### ***Do you think any of the skills they have learnt in these workshops (including the listening practice) have been or will be useful in other subjects?***

*The Audacity skills will be useful in their ICT lessons, and the listening and music skills practised will be helpful for science and music. We are moving on to a science unit of 'sound' next half term, so we are able to link this learning in well.*

### ***Many of them chose horror themes for their stories, is that a common type of theme when they write stories in general or do you think the sounds and effects they were using triggered these kind of ideas?***

*It is quite common when they write 'suspense' stories. I think the noises being slowed down triggered it, because they sounded so strange. We are also reading a suspense story at the moment which might have made them think of the horror theme. However, they are exposed to some unsuitable content at home, which also means they often talk about gory things.*

***Do you have any suggestions for how the workshops could be improved?***

*Make the link between the listening and the composition more explicit - keep revisiting it and explaining it to them. That way they will understand how the two sections go together.*

*Thanks so much again for coming in. The children have had an amazing half term working with you.*

***School H***

*1. Children were very interested in listening to the sounds around them. Many children got a lot out of the sound walk. They listened carefully and enjoyed documenting the sounds on a map. They found it challenging to identify features of sounds, such as high/low pitch. Interestingly they are more than capable of distinguishing high/low pitches of instruments but when it is a more abstract they struggle a little to categorize or describe its properties.*

*2. Using Equipment - Many children enjoyed the opportunity to use recording equipment. By using headphones and putting them in control of recordings made them listen more in more detail. Maybe more work could be done with children listening to pre made recordings to identify sounds to give them ideas to record more. Also experiment with the placement of the mic and the effect. Close/ Far away. Many children didn't really understand that the mic would record everything around them and that background noise should be minimised.*

*3. Composition - All children worked well with Audacity and enjoyed manipulating sounds. They all found the idea of different sounds together in a composition challenging. They perhaps needed some discussion on the form of composition and build their own visual map of dynamics/ tension / ideas first. They could use this to add sounds to make a more structured composition.*

## *Appendix J: Narrative Examples*

School A narrative example (SAcomp3 on DVD)

### Fire on the beach

One day there was a fire on the beach and someone tries to get away by diving in the sea and hears the tide upon the beach, fire-fighters trying to put it out, He then goes underwater and swims further upon the beach.



School B narrative example 1 (SBcomp2 on the DVD):

### 12:00 there's something in the house

The ghostly children laugh and play with their Barbie dolls. The breeze whistles into the creaky windows. The crooked doors creak. In the old, haunted house the children could hear the midnight storm.

The parasoph comes out of the unknown closet down in the black, horrible, dark, cellar. The parasoph roars got louder and louder, the ghostly children's breathing got faster and faster until...

Suddenly silence descended the haunted house the parasoph struck. He pranced around the room knocking the children over several times. The doors creaked the wind blew it was a dark



cold wintery night, the parasoph's birthday. When will it strike again? Will it be in your dark cold horrible attic, cellar or basement, just check! I always do, hey look there it is...

*School B narrative example 2 (SBcomp3 on DVD)*

My sound story

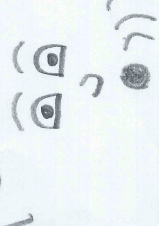


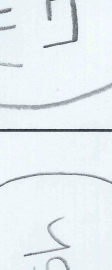
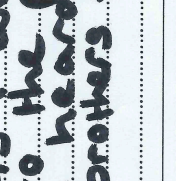
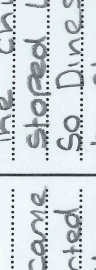
Jack was running through a dark and long forest away from a man with a gun! He was near the end. When he got to the end of the forest and had to jump off a 20 meter high to survive *(Wait till sound ends)* Jack had opened his eyes. It was just a dream. He had this dream before! So he closed his eyes and went back to sleep.

*Wait till sound starts again*

*(Read quickly)* He was now in a place with guns firing! he was inside a tank he jumped out the tank (door bangs){more gunfire} he saw a bullet coming toward... He was in a dream inside a dream he was actually at school!



*School D narrative example – see next page (SDcomp3 on DVD)*

<p>(FOOTSTEPS) and ball bounce</p>	<p>As I walked to the park I heard my brothers footsteps.</p>	<p>(Scream) </p>	<p>Scaredly the children ran away screaming to their mums and dads.</p>
<p>(Mr. Brown LISTEN) </p>	<p>The children stopped listening So Dinesh had to shout LISTEN!</p>	<p>(Piano strings) </p>	<p>Meanwhile there was one child left at the park who started to play the guitar.</p>
<p>(Dinesh) </p>	<p>Just then a Sports coach came along and started doing sports with the children.</p>	<p>(Me and Anooj) (listen) </p>	<p>The childrens parents came over telling Dinesh to listen to them.</p>
<p>(Class laughing) </p>	<p>When I got to the part of heard all of the children laughing</p>	<p>After that the children was walking home enjoying the sound of the wind.</p>	<p>After that the children was walking home enjoying the sound of the wind.</p>

## **HORROR**

His heart was thumping as fast as light. He heard a scream from two blocks away. He followed the noise, it was constant. When he got there it was a boarded up house blood smothered over the walls. He noticed a shadow in the room, it was breathing heavily, he knew the murderer was holding a long hooked cleaver covered in blood.

The anonymous man was concentrating on his prey (the boy). The man who had come to see what had happened was sneaking up on him when suddenly the killer athletically span round and lunged at his heart. In hope of the man's life he dodged the knife and grabbed his wrist and snapped it in half. When the boy snapped the killer's wrist his hand was laying on the floor paralyzed leaking blood. The killer was subdued and the police arrested him.



# Horror

Sound project story

**The wind is blowing in the dark spooky street .The swings shaking, children laughing. On the right pool filled with blood not with water. Bodies hanging of the roof dripping with blood. A young lady lived in the town Horror she had family that liked arguing, she didn't tell her children that she had a magic door in the basement...**

**The children are running nervously around the play from a gigantic hairy monster covered in blood.**

## **Appendix K: DVD Contents**

The DVD contains all of the 172 compositions completed across all the case studies. Each school has been given a separate folder in which the work is divided between examples cited in the main thesis text and the other compositions. All five compositions produced in Phase 3 are included in the Phase 3 folder.

### **School A Folder**

*Examples referenced in thesis – SAcomp1 – SAcomp3*

*Other compositions – SAcomp4 – SAcomp20*

### **School B Folder**

*Examples referenced in thesis – SBcomp1 – SBcomp4*

*Other compositions – SBcomp5 – SBcomp21*

### **School C Folder –**

*Examples referenced in thesis – SCcomp1 – SCcomp5*

*Other compositions – SCcomp6 – SCcomp9*

### **School D Folder –**

*Examples referenced in thesis – SDcomp1 – SDcomp5*

*Other compositions – SDcomp6 – SDcomp13*

### **School E Folder –**

*Examples referenced in thesis – SEcomp1 – SEcomp10*

*Other compositions – SEcomp11 – SEcomp23*

### **School F Folder –**

*All examples are referenced in thesis – SFcomp1 – SFcomp6*

## **School G Folder –**

*Examples referenced in thesis – SGcomp1 – SGcomp7*

*Other compositions – SGcomp8 – SGcomp11*

## **School H Folder**

### **Class 1 -**

*Examples referenced in thesis – SHAcamp1 – SHAcamp8*

*Other compositions – SHAcamp9 – SHAcamp23*

### **Class 2 –**

*Examples referenced in thesis – SHBcomp1 – SHBcomp8*

*Other compositions – SHBcomp9 – SHBcomp24*

### **Class 3 –**

*Examples referenced in thesis – SHCcomp1 – SHCcomp4*

*Other compositions – SHCcomp5 – SHCcomp17*

## **Phase 3 Folder**

*P3T1 – P3T5*