

**Investigating Students' Learning of
Sustainable Development through
Music Education:
An Exploratory Study at Key Stage 3
in England**

A thesis submitted for the degree of
Doctor of Philosophy

by
Yusi Cheng

College of Health and Life Sciences
Brunel University London

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Abstract

'Education' is widely regarded as the primary agent of transformation towards 'sustainable development (SD). In England, 'Education for Sustainable Development' (ESD) has been an established part of the National Curriculum, but in secondary schools, the subject of music, which seems to have great potential for helping in creating interest and awareness of SD to foster responsible behaviours, appears more often to be ignored. There is a growing enthusiasm for, and anecdotal recognition of, the benefits of using music in the teaching of SD issues to young people amongst educators and musicians. However, no in-depth ESD empirical research with regard to music education and few ESD good practices currently exist. To this end, the PhD, which examines the pedagogical potential of music in ESD and the role of music as a learning medium in the development of students' capacities necessary for a more sustainable future, fills this research gap.

An ethnographical intervention, informed by constructionist and symbolic interactionist approaches, is employed in this project. Sets of music-SD lessons in the lower stages of four secondary schools in London boroughs were analysed as case studies of how SD might be taught in music classrooms. Evidence suggested that it is feasible and beneficial to embed SD into the secondary music curriculum. The findings demonstrated that a transformative pedagogical approach in ESD was achieved by combining different methods for integration, including listening, composing and performing pieces of music, raps and songs on SD and creating and performing junk instruments, with a range of strategies of ESD, such as discussion, audio and visual activities, brainstorming and co-operative work, in a holistic process. For some students, compared with the traditional subjects for ESD, such as geography and science, the particular ways of learning SD within the musical context seemingly resulted in their higher level of enthusiastic, active, participative, affective and transformative learning, and thus positively affected the achievement of the outcomes of ESD, which was manifested in the development of their SD-related understandings, skills, attitudes and potential behaviours.

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Acronyms

CNAEA	The Consortium of National Arts Education Associations
DCSF	The Department for Children, Schools and Families (UK)
DfES	The Department for Education and Skills (UK)
DiE	Drama-in-Education
ESD	Education for Sustainable Development
IBE	UNESCO International Bureau of Education
OECD	Organisation for Economic Co-operation and Development
Ofsted	The Office for Standards in Education, Children's Services and Skills (UK)
QCA	The Qualifications and Curriculum Authority (UK)
REAP	The Reviewing Education and the Arts Project
SD	Sustainable Development
SOED	The Scottish Office Education Department
TiE	Theatre-in-Education
UNCED	United Nations Conference on Environment and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
WCED	World Commission on Environment and Development

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Declaration

I declare that the research contained in this thesis, unless otherwise formally indicated within the text, is the original work of the author. The thesis has not been previously submitted to this or any other university for a degree, and does not incorporate any material already submitted for a degree. It has passed the University Library's plagiarism check through 'Turnitin'.

Name: **Yusi Cheng**

Chapter 1 Introduction

'Unless we are able to translate our words into a language that can reach the minds and hearts of people young and old, we shall not be able to undertake the extensive social changes needed to correct the course of development.'

--- Gro Harlem Brundtland
Chairwoman World Commission on Environment and Development
(World Commission on Environment and Development, 1987)

1.1 Situating the research

The focus of this research is an investigation into the potential of music as a learning medium in Education for Sustainable Development (ESD). Within the contexts that some governments and UN agencies support ESD, there is a new emphasis on citizens' capacities and skills for creating a more sustainable world (UNESCO, 2012a). Therefore, the questions of 'the way we learn' and 'what we can learn' through music for developing these qualities in young people became the two major concerns in this research. Firstly, with the progression of ESD, pedagogy evolves simultaneously (UNESCO, *ibid*). Reflecting on the development of ESD, the need for finding out the teaching strategies to promote learners' transformative learning processes for making a positive change towards Sustainable Development (SD), rather than only the outputs or outcomes of ESD, has been emphasised by Johnson (2009), McNaughton (2008), and UNESCO¹ (2012a). For example, Johnson (2009 p.9) pointed out that 'understanding ESD pedagogy in practise at a deeper level is important'. As a result, the students' learning processes and the strategies of teaching and learning which emerged through the study are explored. Moreover, as music is increasingly viewed as a catalyst for innovation in teaching and learning ESD (e.g. Ramsey, 2002; Wei, 2010), another purpose underlying the study is to investigate the role that music education plays in actively engaging young people in the development of their SD-related knowledge, skills, attitudes and behaviours, as well as their own futures.

¹ UNESCO: United Nations Educational, Scientific and Cultural Organization.

The following section outlines the context and aims of the PhD project, identifies the research questions and situates the research. It also explains the justifications for the research topics and the original contributions that the study makes. After this, the structure of the thesis will be introduced in the next section.

1.1.1 The context of the study

With unprecedented economic growth from the 20th century, the world faces a crisis that affects a lot of people, particularly those who are vulnerable. Persistent poverty and social inequality, conflicts, excessive production and extreme consumption, a growing number of endangered species and cultures, and accelerating depletion of natural resources are inducing the earth to a state of unsustainability (DCSF, 2006; Defra, 2011; McConnell & Stephen, 2005; Wu, 2002). In addition, the global financial and economic crises, which were provoked in 2008, have drawn attention to the risks of long-standing models and practices of economic development based on short-term yield (UNESCO, 2009). As Khataybeha, Subbarinia and Shurmana (2010) state, 'the truth has been visible for decades' (p.599), and it is imperative to move towards 'sustainable development', which is a complex and holistic approach to understand and change the world. Although the urgent need for changes, especially in human beings' behaviour and lifestyles, has been sought for several years, the transformations 'are not occurring fast enough' (Khataybeha, Subbarinia and Shurmana, 2010 p.599; UNESCO, 1997, 2002). While some people expressed their anxiety about the implementation and attainability of the aims of SD (e.g. McKeown, 2002; Swyngedouw, 2007), UNESCO (2012a p.5) suggested that it should 'be accompanied by changes in mind-sets, values and lifestyles, and the strengthening of people's capacities to bring about change'.

To face these challenges, education, as an important tool for social change, has been widely regarded as 'the primary agent of transformation towards sustainable development' (Ciferri & Lombardi, 2009 p.1). The concept of 'Education for Sustainable Development', which is described by UNESCO (2012b) as the practice of teaching and learning knowledge related to SD with the goal of promoting social transformation for a

more sustainable future, emerged, and its importance has been increasingly emphasized by a number of studies (e.g. Ansell, 2006; Haan, Bormann & Leicht, 2010; Huckle & Sterling, 1996; Joy, 1998; Soerjani & Hal, 1997). For example, Ansell (2006) and Rauch (2002) perceived ESD as a dynamic and powerful concept, since they thought it is a vehicle to achieve a positive long-term impact on the various pillars of SD. Agenda 21 firmly identified 'education as an essential tool for achieving sustainable development' and highlighted the necessity of ESD by a full chapter on 'Education, Training and Public Awareness' (UNESCO, 2010).

However, as argued in Chapter 2 in the Literature Review, simply improving and following the traditional model of education, which is oriented towards vocational and economical goals, will possibly continue to destroy the planet (Gadotti, 2010). To broaden the scope and far reaching effects of education on the creation of more sustainable societies, the reorientation of existing forms of education and training towards SD has been suggested (Gadotti, 2010; Haan, Bormann & Leicht, 2010; Howe, 2009; United Nations, 1992; UNESCO, 2012b). According to the results indicated in IBE² National Reports 2012 (UNESCO, 2012a), countries and regions have been paying growing attention to the threats to current and future wellbeing, and increasingly perceive ESD as a driving force of innovation in education, both teaching and learning. By 2012, there had been an increase in the rate of countries embracing ESD. While in some cases ESD is adopted only as a theoretical frame without the evidence of reorientation of education, a number of other countries, including the UK, seemed to have included it in the curriculum or related education programmes.

In England, Ofsted³ visited approximately 50 primary and secondary schools several times between 2005 and 2008 to evaluate the extent to which these schools met the expectations of the national framework for sustainable schools and whether ESD had any impact on developing students' experiences and understanding of SD. The reports (Ofsted, 2008, 2009) showed that in some schools, the staff and students took an active

² IBE: UNESCO International Bureau of Education

³ Ofsted: The Office for Standards in Education, Children's Services and Skills

role in promoting SD within their schools as well as in the wider community. The overall effectiveness of the provision for SD was improved in most of these schools, with a range of positive consequences, for instance, strengthening students' understanding of the impact they make on the planet. However, although a number of schools were already on the way to work towards the Government's target for schools to be sustainable by 2020 and had made progress in their work, there were some areas for improvements in these schools, and most of schools visited 'still had a long way to go' (Ofsted, 2008 p.15). The main findings from a series of government's reports, which were generated from the 2006-2009 school inspections relating to ESD, are organised and presented as follows for the provision of more detailed information:

- SD, as a cross-cutting theme of the National Curriculum, is required to be formally linked to four statutory subjects: Geography, Science, Citizenship and Design & Technology (DfES, 2006; Symons, 2008). As the inspection report (Ofsted, 2009) revealed, it has been an integral component of the planned curriculum in some schools, and 'the links between the improvements made and the 'exciting' curriculum' emerged in the most successful schools (p.15). However, few schools placed SD in an important position of curriculum and school activities. In the majority of schools, bringing ideas about SD into teachers' day-to-day teaching was 'inconsistent', 'piecemeal' and 'uncoordinated', which caused 'short-lived' and limited impact to small groups of students (Ofsted, 2008 p.4-5).
- Most of the time in schools, students learned SD in 'fragmented' and 'lifeless' lessons – Science and Geography through reading didactic materials and books, thinking, discussing and writing, which limited the knowledge and skills and developed values and attitudes that required to become active citizens, (Ofsted, 2008, 2009; UNESCO, 2012a p.32). The lessons, which provided students with greater opportunities for engaging in a range of imaginative, creative, practical and stimulating activities relating to SD with different working styles – individually or in groups, were considered as the best lessons by both Ofsted (2008) and Christine Gilbert (Government Office for London, 2008; QCA, 2009), Her Majesty's Chief

Inspector of Schools, but these kind of lessons were noted as rare.

- Christine Gilbert (Government Office for London, 2008 p.29; QCA, 2009 p.12) and Ofsted (2008 p.5) pointed out that SD was a 'peripheral' issue in a lot of schools. For example, some schools confined SD to very few subjects or extra-curricular activities, or involved only a small number of students. As the report (Ofsted, 2008) indicated, while a few schools are already using stimulating learning activities to encourage students to be green, the majority of schools visited during the inspection had limited knowledge of SD, had limited awareness of and laid little emphasis on the actualisation of government's policies for the area of ESD. Moreover, primary schools seemed to make greater progress and be more successful than secondary schools in improving provision for ESD, especially in promoting cross-curricular approaches which engaged students more in issues related to SD (Ofsted 2008, 2009).

As a result, some suggestions were made along with the provision of more online resources for supporting schools' work in this area. Christine Gilbert (Government Office for London, 2008; QCA, 2009) calls upon more schools to make SD central to their development plans, and Ofsted (2009) encouraged schools to develop a coordinated whole-school approach to ESD in the curriculum, to link ESD with all subjects and to adopt a wider range of approaches for teaching and learning about SD. In terms of the learning approach with regard to ESD, according to Stevenson (2006) and Johnson (2009 p.8), 'the need to create 'space', in which to imagine different futures, to learn by doing, to have fun in the process and to take risks and trust pupils and their abilities to make decisions' in the process of learning SD was emphasised. Educators are challenged to design interesting, effective and meaningful approaches for enabling students to make positive changes in their knowledge, understanding, skills, attitudes, values and behaviours, which they as future citizens need to build a more sustainable society (McNaughton, 2008), and it would be useful to find good ways of helping them meet the challenge.

There is an increasing interest in and recognition about the relationship between music and learning about SD and the positive role that music plays on the ESD programme. Powerful music transcends the barriers of religion, race, culture, language, politics and socio-economic status (350.org, 2011), and connects directly to human being's emotional core (Fuuse-Mousiqi, 2012). 'The only change that will make a difference is the transformation of the human heart', argues Senge et al. (2005 p.26). As Zhu (2003), Gurevitz (2000), Chen (2006) and Hwang, Kim and Jeng (2000) argue, music learning has great potential for helping to create human beings' awareness and development of the ethics of SD to foster responsible behaviour. Moreover, music not only can provide a rich data source associated with SD through lyrics (Ramsey, 2002), but also can be a powerful educational tool to stimulate learners' enthusiasm and enable them get involved in the study and practice of SD (Peng, 2008; Turner and Freedman, 2004; Wei, 2010). Contemporarily, an increasing number of musicians are aware of music's remarkable ability to promote SD and are attempting to integrate the issues of SD into musical activities. For example, a group of leading musicians throughout Africa and other areas of the world gathered together to use the power of song to highlight the issues of climate change and inspire people to join and act together for a brighter future (Artists Project Earth, 2011). Clearwater, as a musical festival, has become American's Environmental Flagship to 'preserve and protect the Hudson River for the benefit of its eco-system and human communities while creating new environmental leaders for a sustainable future' (Hudson River Sloop Clearwater, 2012 n.p.). At the same time, UNESCO (2005b), the Government of Manitoba, Canada (2011) and scholars in China (e.g. Peng, 2008; Qiu, 2009) proposed to introduce issues of SD into music education. However, even though ESD is already present as an established part of the National Curriculum in England's schools (Bonnett, 2003; ESD & GC, 2007; Sterling, 2001), in secondary schools, the music subject appears more often to be ignored and excluded in the ESD curriculum. Facing up to the global threat of unsustainable development (McConnell & Stephen, 2005), the present research project tried to make some changes in the current secondary music classrooms, through which to examine whether music could help educators to meet the SD challenges, which have been discussed in the preceding paragraph.

1.1.2 The justification and original contribution of study

I first became aware of ‘sustainable development’ and ‘education for sustainable development’ when I studied my MA course at Brunel University in 2009. Both concepts were completely new for me at that time, and the roots of my interest and enthusiasm in them and music education stemmed from my background of work and my experiences of study and research.

Firstly, my personal experiences of teaching opened up an opportunity to access cross-curriculum teaching and the issues of SD, in spite of my ignorance of the concept of SD and ESD at that time. I used to be a music teacher in one of China’s secondary ‘Green Schools’ from 2004 to 2008. Following the requirements and advice from the National Curriculum, government and schools, I used music as a learning medium in my classrooms to help students to learn about, for instance, English, Chinese traditional drama, dance, art and history, and to think about some issues, such as peace and war, the relationship between humans and animals and countries. Meanwhile, I also served as a deputy director of the Moral Education Office in this school, which worked to help students acquire ‘good’ virtues and ‘moral’ habits, and was responsible for organizing students’ diverse activities, including activities related to environment and caring for and helping vulnerable groups. These work experiences led to a deep interest in secondary education, music education, cross-curriculum teaching and ESD. Moreover, serving in the Moral Education Office, I found that for students, it is not enough to learn SD only through educational activities, and due to the limited times of activities and the limited number of participants, teachers cannot make sure all children have equal opportunities to receive ESD. Therefore, the combination of these two educational experiences made me profoundly realize the need for introducing SD into classrooms and teaching it across subjects in schools, which encouraged me to undertake research in 2010 for my Master thesis on ‘incorporating sustainable development into the secondary school music curriculum in China’ and, consequently to develop this further through the PhD research.

One of the significant influences on my choice of the focus of this study emerged from my experience of research at the end of my Master course. The Master's research project in China, which involved a four-week music teaching experiment, interviews and questionnaires, examined the effectiveness of integrating SD into secondary music education through the exploration of the changes in students and teachers' interests, knowledge, awareness and behaviours of SD. However, some problems on pedagogy were encountered by music teachers during four-weeks of teaching. For example, it was the view of one student that some issues about SD were compulsorily added to some music courses on occasion, and three children complained of too much content about SD in the music lessons, which affected their normal learning of music. It revealed that how to present the subject of SD in an interesting and effective way is a problem for the music teacher, as well as for me, both as a researcher and a music teacher. The teaching practice made us question the adequacy of pedagogy proposed by governments and the United Nations. Since the concepts of SD and ESD were produced in western countries, and from the view of many Chinese academics, western countries also possessed a more developed theoretical system of education and advanced educational ideas in the world, there tends to be a broader perspective on the latest trends in SD and ESD in those countries including the UK. I was eager to investigate England's approach and practices, and I hope fervently that these pedagogical ideas can provide Chinese music teachers with some inspirations to their future teaching works relating to ESD, though they may not be directly transferable to China.

Furthermore, the final selection of the research questions and methods is not only affected by the personal reasons that are discussed above, but are also determined by a review of relevant previous work. The literature reviewed in Chapter 2 reveals two main reasons for undertaking this research. Firstly, although the benefits of the revision of the National Curriculum for SD have been endorsed by governments, some organizations and experts (e.g. Ansell, 2006; ESD & GC, 2007; Ofsted, 2008; SEEd, 2012; Sterling, 2001; UNESCO, 2007), the UN Secretary-General declared that 'few successful working models of education programs for sustainable development currently exist' (Ansell, 2006). 'Theory is meaningless without practical applicability in real people's lives' (UNESCO,

2012a p.21). As the Bonn Declaration (UNESCO, 2009) indicated, there are a number of underlying philosophies relating to ESD, which need more ESD 'good practice' and in-depth case studies of schools to inform theory, policy and practice. At the same time, appropriate pedagogies for teaching sustainable development are also needed to deliver effective ESD programmes in schools (Law, 2003). Secondly, even though arts, including music, have been referred to in ESD documents, and discussions on the relationship between music and nature, environment, society or sustainable development appear in a number of articles, it is still impossible to uncover any previous empirical research on how SD is embedded in music classrooms, to support these arguments, except my MA dissertation. Without findings from in-depth research, it cannot be demonstrated whether reorienting music education is a feasible and effective way to change people's behaviours and lifestyles towards SD. To this end, this thesis asks new questions which arose from my MA findings and provides more in-depth critical ESD research with regard to music education, and can therefore be seen as a contribution to the field of ESD.

All of the above reasons helped generate my study topic. The potential of ESD is an important issue (UNESCO, 2012a). The main task of this research is examining and discussing its potential and providing evidence from case studies – of which there are lacks, and the main contribution of this thesis confirms and strengthens the relationship between SD and music learning through the provision of an evidence base. I hope the ideas and strategies which emerged from the examples of teaching within my research are able to help other schools in England in striving to achieve SD more generally, and also will be helpful in providing some valuable insights and inspiration to educational departments, headteachers and music teachers in secondary schools around the world for promoting a sustainable society.

1.1.3 The aims of the study and the research question

This research is driven by four overarching aims of investigation:

a) Assessing the pedagogical potential of music in ESD;

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- b) Examining the contributions that music learning can make towards the development of students' capacities necessary for a more sustainable future;
 - c) Identifying examples of how SD might be taught in secondary music classrooms in England; and
 - d) Offering implications and recommendations for future policies internationally regarding ESD and the practices for SD in music classrooms.

As discussed in Section 1.1.2, the research questions were framed through reviewing the related literature, and their generation was also influenced by my experiences of teaching and learning. There are two main research questions and four sub-questions, which are employed here for the purpose of guiding the research in answering the main research questions:

1. What is the feasibility of stimulating young people to make changes for a sustainable future through music learning and teaching?
 - a. *In what ways are the conceptual and affective dimensions of sustainable development translated into music classroom teaching? Which teaching strategies can be employed?*
 - b. *What are the participants' (both students and teachers) actions and interactions within the music lessons? How do they respond to the lessons in an emotional way?*
2. Can music play a transformative role in young people's knowledge, skills, attitudes and behaviours towards a sustainable model of development?
 - a. *Which specific ESD outcomes, in terms of knowledge, skills, attitudes and behaviours, may be achieved through the medium of music classroom learning?*
 - b. *What are participants' perceptions with regard to the relationship between music and sustainable development, and the potential role of music education in extending students' learning in ESD?*

1.2 The structure of the thesis

The thesis is divided into seven chapters. The following paragraphs briefly describe the content of each chapter.

Chapter 1 has provided an overview of the background of the study, and explains the justifications for the research topic and the questions. It also introduces the aims of the thesis and the research questions, and identifies the contributions that the research makes. Finally, the format of the study is outlined in this chapter.

The literature review in Chapter 2 aims to establish a comprehensive theoretical background to the thesis. The articulation of key concepts, including 'sustainable development' and 'education for sustainable development', arising from the critical review of these literatures is presented in the chapter. Moreover, it explores the relationships between education and SD and between arts education, especially music education, and SD, as well as the potential contributions of music education to a more sustainable world. The review of the literature suggested that the changes in human beings' responsible behaviours that contribute to a more sustainable future, requires the combined effects of SD-related knowledge, skills, awareness and attitudes, and music. This can promote emotional, aesthetic and cognitive development through active participation in arts activities, and has great potential for being an educational tool for learners' acquisition of SD-related knowledge and skills, development of complex understandings of SD issues and creation of awareness and attitudes to SD. However, there is a gap between these assumptions and actual practices. As a result, this project seeks to generate and provide empirical evidence to fill the research gap.

Chapter 3 sets out the philosophical and methodological framework for the case study and offers a detailed account of the adoption of the research methods. The chapter begins by discussing the epistemology and theoretical perspectives that influence and underpin the methodology and the research approach, and then the rationale for using an ethnographical research methodology is presented. Fieldwork was conducted in four

secondary schools in London and lasted for ten months, which included a teaching intervention in each school's Year 7 music lessons to address the issues of SD. The research process and the design of research instruments, which aims to find answers to the research questions presented at the end of Chapter 1, are described, with an exploration of their practical use in the context of the present research. The chapter ends with a discussion of the ethical issues associated with carrying out study within educational settings.

Chapter 4 presents the geographical and contextual background of the research, which might have a possible influence on the research findings. At the beginning of the chapter, general information on English compulsory education system and secondary music curriculum, and the characteristics of the music classroom teaching in England are described. It then provides a clear picture of the context of the case study schools and the profiles of participants, both music teachers and students, in each school.

Chapters 5 and 6 present and analyse the data obtained from the fieldwork and discuss the results that emerged from the analysis in connection to the relevant literature, for the purpose of answering the two main research questions. Chapter 5 demonstrates the pedagogical link between the teaching of music and SD, through providing examples of the specific strategies and actions during the music-SD lessons, which allowed the students in the study to practise and develop a range of knowledge, attitudes and skills pertaining to both music education and ESD. Different methods for connecting of both disciplines were employed by the four music teachers: the teacher in the first school used 'rap', both teachers in the second and the third schools used 'composition' but with different teaching methods, and the fourth teacher organised 'Junk Bands' in his classroom. At the same time, a combination of teaching methodologies, such as discussions, audio and visual learning activities, co-operative work and brainstorming, were integrated in the lessons for the improvement of students' classroom interactions. Chapter 6 focuses on the contributions that the teaching interventions made to the field of ESD. Although a very few participating students kept negative attitudes to the innovative methods of learning SD and viewed SD as an 'add on' to their musical learning, the

evidence from a variety of sources identifies that engaging in music classroom activities has the potential to facilitate young people's range of learning in ESD and to help them meet the learning outcomes regarding ESD, in terms of knowledge and understanding, skills, awareness and attitudes, and behaviours. The findings also suggest that the musical learning activities, organised by the adoption of a comprehensive approach during the music-SD lessons in each school, can deepen, in varying degrees, students' emotional, intellectual and social aspects of learning and had the promotional and transformative characteristics for ESD.

In the final chapter, Chapter 7, the overall results are finally reflected on and discussed, and the main findings of the study are synthesised and summarised on the basis of the research questions. The findings of this study appear to have some implications, including the implications for pedagogy, for the role of music education in SD learning and for the future works of governments, schools and ESD stakeholders, which are also examined here. The chapter then reflects the research methods with an investigation of the limitations of the research, and some suggestions and recommendations for the future are offered.

Chapter 2 Literature Review

2.1 Introduction

The aim of Chapter 2 is to review and synthesize literature relevant to a study of transforming people's values and behaviours towards a sustainable future through music education. Therefore, a theoretical framework encompassing sustainable development (SD), education for sustainable development (ESD), arts education and music education is provided and explored in this chapter to guide whole research project.

The chapter starts by outlining the context, the conceptual and affective dimensions of, and the main challenges of SD which underpin ESD and the present research. The concept of ESD and the links between education and SD are then introduced and examined. It includes a critical discussion of the nature and basic roles of education, the relationship between education and SD, what ESD really means and the methods used by education for the achievement of SD. The overview of SD and ESD provides the background to then explore the theoretical underpinnings of music education and its relationships with SD as well as ESD.

The latter sections of this chapter are used to find out how music is reported to provide opportunities to meet the objectives of ESD programmes, through a review of the relevant theories and literature pertaining to arts education, music education, their links with SD and ESD. The significance of music and the implications of using music as a learning medium to achieve social and individual transformations are specifically investigated here.

2.2 Sustainable development

'Sustainable Development' has often been taken as a key guiding notion for discussions of environment, energy and education (Bonnett, 2003). The General Assembly of the United Nations (2010 p.10) emphasized the urgency of implementing SD and reminded

people that 'we are running out of time' for the rebalance of human beings' relationship with the earth. In this section, the context, a brief history, definition and the main challenges of SD are set out for the subsequent argument of ESD in the next part, and also for the whole thesis.

2.2.1 The context for 'sustainable development'

There is a growing realization that the earth 'is in a state of crisis' (Khataybeha, Subbarinia and Shurmana, 2010). After the Second World War, 'development' became the guiding principle of the present era (An, n.d). Countries across the world, whether developed or developing countries, were committed to modern scientific and technological progress, economic development and social development (An, n.d.; Elliott, 2006). From that time, the concept 'development' was seen in terms of modernization and was equated with economic growth by the dominant view (Elliott, 2006; Summers, Corner & Childs, 2003), 'without fully considering the wider or future impacts' (SDC, 2011). However, while almost all humans have been intoxicated with material comforts, a host of problems have been rapidly created, such as increased pollution, the loss of biodiversity, abuses of human rights, inefficient use of energy, global warming and a widening of the gap between the rich and the poor (DCSF, 2006; Defra, 2011; McConnell & Stephen, 2005; McKeown, 2002; Wu, 2002). Along with the revealing of a series of alarming statistics, for instance on deforestation, illiterate and out-of-school children, social inequality, the widening gap between the rich and poor, and health and cultural problems (e.g. Khataybeha, Subbarinia & Shurmana, 2010; Sterling, 2001), which convincingly demonstrate the increasing burden that humans are placing on the planet, an escalating number of people are aware that the world is facing the global threat of unsustainable development (Li & Chen, 2008; McConnell & Stephen, 2005). The conventional model of development is increasingly queried and disputed (Defra, 2011; McKeown, 2002; Sauve, 1996). For example, a number of ecologists reject material and instrumental viewpoints in favor of an emphasis on 'production levels which can be borne by the ecosystem' (Summers, Corner & Childs, 2003 p.328). Kaprawi, Razzaly and Azroai (2008) argue that 'development' should be recognized as 'more than a narrow

measure of material prosperity and economic growth'. And the Sustainable Development Commission (2011 n.p.) expressed its viewpoint that 'the longer we pursue unsustainable development, the more frequent and severe its consequences are likely to become we might need to change the way we work and live now'. To meet the unprecedented challenges of unsustainability, a new concept of 'development'---'sustainable development', which aims to find new technologies and better ways of doing business, both for the present and the future (McKeown, 2002 p.9; SDC, 2011), emerged (Fan, 2008). As Kyburz-Graber and HoÈgger (2001 cited in Rauch, 2002) and Elliott (2006) point out, SD is looked upon as an important rallying point for research and action, as well as a desirable and guiding principle for policy programmes in different countries.

2.2.2 The conceptual meaning of sustainable development

The idea of 'sustainable development' is not new (Elliott, 2006). As a term or concept, 'sustainable development' is globally spread and has already been in use for several decades (Yang, 2006). However, there is a proliferation of definitions of the concept from the end of 1980s (Johnston et al., 2007). Much discussion about the meaning of SD has been noted in academic terms, and some journals devoted special issues to these discussions, such as *Land Economics* (November 1997) and *Conservation Biology* (February 2015). The best known and most commonly quoted definition was introduced in the highly influential report of the Brundtland Commission in 1987, which described sustainable development as '*a development that meets the needs of the present without compromising the ability of future generations to meet their own needs*' (WCED, 1987 p.8). Apart from this, a number of other definitions associated with SD are also spread in the debates around SD. For example, Pearce (1993) argued that:

'Sustainable development is concerned with the development of a society where the costs of development are not transferred to future generations, or at least an attempt is made to compensate for such costs.'

Moreover, the phrase 'triple bottom line', which was first coined by John Elkington, is another widely referred notion. It claims that:

'Sustainable development involves the simultaneous pursuit of economic

prosperity, environmental quality and social equity. Companies aiming for sustainability need to perform not against a single, financial bottom line but against the triple bottom line' (Elkington, 1997 p.397).

The three pillars were reaffirmed and developed at the World Summit on Sustainable Development in 2002, and were defined as 'economic development, social development and environmental protection', which were simultaneously suggested to be set 'at local, national, regional and global levels' (UNESCO, 2005a n.p.).

2.2.3 The affectivity of sustainable development

In the field of SD, although the power of emotions was often ignored in the past, the connection between emotions and SD compels researchers to pay more attention to these emotions. For example, while early studies with regard to environmental sustainability focused on cognitively driven behaviours, in recent years, there have been a number of studies concerned about the affective aspects of individuals' pro-environmental behaviours (Cheng & Monroe, 2012).

For a lot of people, the journey to sustainable development begins with emotion, rather than its conceptual meanings (Schley, 2011). As Schley (2011 p.4) argued,

'We may hear a report that 30,000 children will die of starvation after a natural disaster has occurred. There may be reason to believe that global climate change is involved in triggering the disaster. And we feel not just a sense of connection, but grief (mourning the loss), anger ('How was this allowed to happen?') or fear ('Could this happen again?'). We may also feel the sense of joy that naturally arises when people are connected to each other and to the natural environment.'

Emotions are reflexive responses to events in the internal or external environment (Juslin, 2011), and different emotional reactions could be created, not only depending on the different objective stimulus, but also in light of individuals' unique way of making meaning of reality (Lazarus, 1994). A number of studies (e.g. Cheng & Monroe, 2012; Kals, Schumacher & Montada, 1999; Österlind, 2012; Schley, 2011) examined people's emotional responses to nature and concluded that these emotions can be instigated by their experiences in nature. For example, taking part in outdoor activities may produce

emotional affinity toward nature, seeing animals being harmed may increase empathy, polluting activities could generate resentment and fear of humans' health problems, own environmental sins or insufficient natural protection by oneself may create guilt and self-blame. In addition, citizens, governments or industry's insufficient measures towards SD may generate indignation, and the vastness of the gap between aspiration and current reality regarding the planet could bring about some despair.

To establish national and worldwide sustainable development, both SD-specific cognitions and emotions are considered to be necessary for individual's sustainable behaviour and decisions (Kals & Maes, 2002). Emotions, such as fear, anger, joy, grief and empathy, are hardwired in humans' biological systems (Damon, 1996; Schley, 2011). In Schley's (2011 p.5) work, a string of rhetorical questions is used to emphasise the integral role that emotions play in any sustainability effort and the necessity of distinguishing the source of different emotions and making them more explicit:

'Without making our grief explicit, how can we find the motivation to get involved in efforts to save the 30,000 children who will otherwise die of starvation? Without exploring the anger we feel at the injustice of thousands of infants being born with mercury toxicity, how can we act to change that outcome in our industries and our regulations? Without naming our fear of the consequences of polar ice caps melting, how can we take the actions necessary to create clean and renewable energy sources? And without taking the time to draw forth the joy we feel in celebrating our achievements, how can we have the strength to endure?'

In many situations, emotions seemingly can be valuable as an important impulse and indicator for reflection and pro-SD behaviours and actions (e.g. Fröhlich, Sellmann & Bogner, 2013; Ojala, 2013). Supposing, for example, one person feels sad and angry when you know that 30,000 children die of starvation. Their emotions may lead them to find a compelling need for more effective actions and quietly reflect upon what a person possibly can do to make a difference. Your heart may be opened, and probably, you would write a check to some trustworthy agency, such as Oxfam, and then take more actions, according to your capacities and the vantage point of your life's work, in service of SD, small and large, day to day (Schely, 2011). The results of a range of relevant

empirical investigations suggested that 'nature-protective behaviours, like reduced energy consumption, is not purely based on rational decisions but is motivated by emotions', which are seen as the guarantee of success in promoting these behaviours (Kals, Schumacher & Montada, 1999 p.179).

The main functions of different emotions are discussed in several studies, and there is some evidence that these affective factors provide people with energy and a potential direction for their efforts for positive behaviours towards SD. Nine essential emotional factors are selected as examples here for further discussion.

- Emotional affinity toward nature, such as 'love of nature' and 'feeling a oneness with nature', as a motivational basis for nature protection, is considered to make an enormous positive difference to people's understanding, perspective and capabilities, as well as to predict the variance in pro-environmental behaviour to some extent (Cheng & Monroe, 2012; Kals, Schumacher & Montada, 1999 p.182; Mayer & Frantz, 2004; Schely, 2011).
- Sympathy is examined to have an affective influence on both pro-environmental behaviours and pro-social actions (Allen & Ferrand, 1999; Ojala, 2013). Actively caring about others is considered as a vital component of producing individuals' altruistic behaviours necessary for sustainability (Geller, 1995), and sympathy could be 'a measure for the psychological and motivational aspects of actively caring', and simultaneously 'mediated the relationship between environmentally friendly behaviors and all other factors such as self-esteem and personal control' (Allen & Ferrand, 1999; Cheng & Monroe, 2012 p.33).
- Empathy, which is about sharing others' feelings, appears to be able to help individuals cognitively adopt others' perspective, be emotionally aroused by them and then activate their motivation to take actions (Hoffman, 2000; Schultz, 2000). De Waal (2008) described the basis of empathy as the existence of 'mirror neurons', which enables people to strengthen their understanding of others and the problematic situations of the earth through emotions, rather than conscious thought.
- The feeling of satisfaction can be derived from people's pro-SD behaviours and actions, such as recycling (Young, 1986). The results of Young's work (1986 p.447)

indicate that people might carry out positive behaviours ‘not for the promise of a tangible external reward but for the personal satisfaction they derive from the activity’.

- A number of empirical researches (e.g. Brader, 2006; Marcus, MacKuen & Russell, 2011; Valentino et al., 2008) identified the emotional aspect of worry and anxiety as a significant precondition for critical thinking and deliberation, rather than the antithesis of them. The two emotions are perceived to be the forces that activate people’s cognitive system and make them more focused and more reflective in deliberative processes (Ojala, 2013).
- Three emotions, including self-blame, indignation and anger, are proved by Kals’ studies to be correlated with people’s willingness to commit and to undertake behaviours, which are positively related to SD. Indignation about others’ insufficient positive SD-related behaviours and actions seems to be the most powerful predictor (Kals, Schumacher & Montada, 1999).

2.2.4 The main challenge of sustainable development

Arguably, the concept of SD, which was first put forward in the ‘World Conservation Strategy’ in 1980, promoted by WCED⁴ in 1983 and 1987, and popularized by UNCED⁵ in 1992, has been successful in initiating dialogue between actors in the environmental and economic spheres (Sauve, 1996; Sauve, 2002 cited in Summers, Corner & Childs, 2003). However, from the 1990s, a series of challenges and controversies, which concern the meaning and practice of SD and reveal the contradictions in it, emerged (Disinger, 1990; Elliott, 2006; IDRC, 1992; Krueger & Gibbs, 2007; Orr, 1992; Plant, 1995; Slocombe & VanBers, 1991).

2.2.4.1 Sustainable development – an ambiguous phrase

Different interpretations of ‘sustainable development’ are often at the heart of these contradictions, and its meaning is criticized as being complex, dubious, multi-faced and contested (Rauch, 2002; Sauve, 1996; Summers, Corner & Childs, 2003). Although a

⁴ WCED: World Commission on Environment and Development.

⁵ UNCED: United Nations Conference on Environment and Development.

global consensus on the significance of establishing a sustainable society could be achieved by the diverse definitions, when people move 'sustainable development' from the stage of theoretical considerations into another stage of concrete practice, a number of complex challenge may be encountered due to the inadequate clarity and preciseness of the concept (IUCN, 2006). As Portney (2003 p.3) stated, 'as a matter of practice, (SD) has come to mean so many different things to so many different people that it probably does as much to promote confusion and cynicism as positive environmental change'. McKeown (2002 p.7) also expressed the viewpoints that while it is not hard to identify what is unsustainable around us, 'we have difficulty envisioning a sustainable world.....because we lack a clear definition of sustainability'. The term 'sustainable development' has been frequently used, yet sometimes is misunderstood and misused by a variety of groups and entities in different ways (GDRC, n.d.; Mawhinney, 2002; McKeown, 2002). For example, although SD as a new idea of development has been widely recognized in many countries, their different histories and economies lead to different ways of defining SD (Jia, 2002). The policy in rich countries seeks to 'maintain an acceptable rate of growth in per-capita real incomes' without jeopardising the natural environment, resources and ecosystems (Elliott, 2006 p.10). On the contrary, poor countries seemingly prefer to spend more effort on the improvement of employment and today's quality of life, as well as on the preparation for the future generations to create more wealth (Elliott, 2006; Jia, 2002). As a result, rich countries are in a position to export their negative externalities (e.g. pollution from production/extraction) to low-income countries, who are just making an argument to exploit their natural resources in the way in which Western countries did in their industrial revolutions (Wheeler, 2001). Additionally, people in different academic areas express their diverse visions of the ideal sustainable society. To economic educators' eyes, 'sustainability is living on the interest', whereas the human rights community considers that it is attainable through peace, justice and democracy (McKeown, 2002). In a telling analysis, Bonnett (1999 cited in Summers, Corner & Childs, 2003 p.328) notes 'how any surface agreement on sustainable development soon breaks down when one asks what it is that is to be sustained'.

In comparison with the people, who show concern for the different interpretations and different understandings of 'sustainable development' and are sceptical about its actual process of implementation, other critics have eloquently expressed opposing viewpoints that 'there is no need for one' (UNESCO, 2005a n.p.). A number of experts strongly believe that the lack of precision in the definition of the term of sustainable development is positive for ultimately achieving a sustainable future. It is not reasonable to perceive these different conceptions of sustainable development as a problem to practice. Contrarily, the vague, overly broad and nondescript nature of the term appears to 'provide a foundation upon which fulfilling the responsibility requires a holistic approach to understanding the world' (Khataybeha, Subbarinia & Shurmana, 2010 p.599), and also 'can delineate an extremely creative, manifold and dynamic field, which is nevertheless oriented towards one direction' (De Haan & Harenberg, 1999 cited in Rauch, 2002 p.48). 'Sustainable development' relates to a process of change, which leads to a possible evolvement of its meanings depending on local contexts (UNESCO, 2005a), and the ambiguity with the term allows 'a considerable consensus to evolve in support of the idea that it is both morally and economically wrong to treat the world as a business in liquidation' (Daly, 1991 p.223). Moreover, GDRC (n.d.), Jickling (1995), Robottom (1990) and Sauve (1996) recommend regarding this diversity as 'fuel' for critical reflection, disputation and evolution, which aimed at helping them develop their own relevant theories and adopt it to different situations and scales.

2.2.4.2 The feasibility of sustainable development

The transfer of the theoretical and abstract concept of sustainable development to a reality for all the world's people has become another equally conspicuous problematic topic (Annan, 2001 cited in SOS Children, 2005; Krueger and Gibbs, 2007). With the calls from Agenda 21, local authorities in many countries, including the UK and China, have been encouraged to develop their own action plans for SD (Buckingham-Hatfield and Percy, 1999; Fan, 2008; Krueger and Gibbs, 2007; Yang, 2006). According to reports from ICLEI - Local Governments for Sustainability, since the early 1990s, more than 6000 local governments from 113 countries have taken initiatives for local and regional sustainability (International Council for Local Environmental Initiatives, 2002).

Swyngedouw (2007) firmly believes that as things stand, it is hard to find any person who is not in favor of SD. However, while 'sustainability' looks like a winner 'in the battle of big public ideas' (Campbell, 1996), the work of Elliott (2006) and Khataybeha, Subbarinia and Shurmana (2010) trenchantly argue that people's behaviour transformations are occurring too slowly, and little sign of change has emerged. Consequently, some people argue and express their fear that SD cannot be attained (McKeown, 2002). Mitchell (1997 cited in Elliott, 2006) described SD as an 'intuitively attractive' but 'slippery' concept. Moreover, other skeptics 'pointed to the danger of this term being reduced to a mere catchword.....and the underlying idea may degenerate into an empty shell' (Rauch, 2002 p.5).

Meanwhile, a number of other authors deem that this concept, incorporating ideas, strategies and tools, can eventually lead to a sustainable future. Summers, Corner and Childs (2003 P.328) indicate that 'sustainable development is such a prevalent and successful concept precisely because it can mean all things to all people'. The term 'sustainability' has been qualified as a 'universal spell' (Rauch, 2002; Summers, Corner & Childs, 2003), more specifically, all people can subscribe to it conveniently, 'from enlightened captains of modern industry to subsistence farmers' (Bonnett, 2003 p.681). Over the last few decades, the discourse of SD has been widely deployed for different purposes (GDRC, n.d.), and it seems to be 'happening in a variety of concrete forms', such as more bike paths, carbon emission reduction and environmental improvement strategies (Krueger & Gibbs, 2007). It is evident that for the purpose of narrowing the gap between theory and practice, more detailed analysis is required, which not only come from these commentators, but also from those experts 'with a keen understanding of the process and problems of social change' in different contexts (Krueger & Gibbs, 2007 p.6).

From what has been discussed above, it is not difficult to find out whether SD is achievable and the ways of transforming people's visions for society into reality have become two of the biggest challenges in the 21st century. According to UNESCO, education, as a human right, plays a key role in bringing about a transition towards SD

(UNESCO, 2005a). In the following section, the role of education in a sustainable society and its contribution to SD will be discussed in detail.

2.3 Education for sustainable development

‘Education is the most powerful weapon which you can use to change the world.’

--- Nelson Mandela

If ‘sustainable development’ is concerned with ‘continuance’, meaning that ‘earth continues for as long as is possible’ (LTS, 2010 n.p.), then ‘education for sustainable development’ can be described as ‘the process of learning ‘how’ to do that, and the learning process ‘for’ sustainable development’ (Porritt 2005; Tlibury, 2004). Before exploring its related pedagogy of participation, a better understanding of ‘education for sustainable development’ and the on-going debates is necessary.

2.3.1 The role of education towards sustainable development

From the time when SD was first endorsed, its relation with education has also been explored (McKeown, 2002). As Sauve (1996 p.29) noted, the ultimate goal of contemporary education ‘is the development of responsible societies’, ‘and sustainability is one of the expected outcomes’. The critical contribution that children and youth can make towards the achievement of SD has been emphasized in Chapter 25 of Agenda 21 (United Nations, 1992). Education not only enables young people to be better individuals, citizens, family and community members for a sustainable future (Ciferri & Lombardi, 2009), but also directly affects the plans of sustainability in the following three areas: implementation, decision making and quality of life (McKeown, 2002). According to DCSF⁶ (2006 n.p.) in the UK, ‘tomorrow’s solutions may be found by the children in our classrooms today’. McKeown (2002) also confirmed the close interrelationship between education and sustainable development, and discovered that agricultural productivity, citizen’s living standards, environmental protection and the status of women can all be improved by education. As she argued, in many countries, low education level ‘severely

⁶ DCSF: the Department for Children, Schools and Families

hinders development options and plans for a sustainable future', whereas a higher level of education creates 'greener' and more sustainable industries and works (p.11).

Education has been repeatedly upheld as an essential and necessary tool for promoting and improving humans' ability to deal with SD issues. Orr (1994) drew attention on the fact that most people in the world seem to be closing their eyes to the current serious unsustainable problems without any sense of danger and guilt. Faced with the serious crisis, some researchers discovered that learning, which plays a key role in changing human's mind towards SD, is considered as the surest road to solve this intractable crisis (An, n.d.; Sterling, 2001). At the same time, since sustainable living is a new pattern for individuals from 1990s, (IUCN/UNEP/WWF, 1991 cited in Tilbury, 1995), people also require a much better understanding of SD issues through education to negotiate, persuade and help authorities to enact radical policies, and put the ideas and policies into practice (Buckingham-Hatfield and Percy, 1999; Macnaghten, 1995 cited in Huckle and Sterling, 1996). As Meadows, Meadows and Randers (1992) and Henderson (1993) concluded, the different thinking and practice on living, which result from education, largely determine whether the future is sustainable or chaotic.

In order to examine these points of views and further identify the effects of education towards SD, the nature of education itself is investigated below.

2.3.1.1 The nature of education

For many people, 'education', which is commonly used to mean a process of transmitting ideas from one generation to another and of fostering and developing a whole person, is regarded 'as a self-evidently 'good thing' and also as a stock 'answer' to social and other problems' (Bass, 1997; Fraser, 2006; Sterling, 2001 p.24). Moreover, education is an old but still contested concept, and different conceptions and ideologies are manifested in educational debate, theory and practice (Sterling, 2001; Winch, 2002). In recent years, while most philosophers, academics and politicians' discussions are focused on the latest issues, some people are conscious of the infrequency of argument about the purpose of education, which is the most fundamental theory of educational philosophy

and one of the primary keys to unlocking the values of educational system and the nature of education (Bass, 1997; Sterling, 2001). Although this topic has been discussed from ancient times, few people are able to supply a comprehensive answer to this question today (Bass, 1997; Campbell, 2008). How can we examine the relationship between education and SD without a deep understanding of the nature of education? And if we don't know what a desirable outcome looks like and what possible effects will be produced, how do we evaluate the education process, especially in terms of its contribution towards the fulfillment of the purpose of SD? As Sterling (2001) makes clear, to orient a more successful educational paradigm for SD, it is significant to come to understand its values which 'are implicit, and indeed, dominant in current educational thinking, and also trace these back, in Schumacher's words, to 'our central convictions' (p.25).

What are the purposes and roles of education? Educational theory in the modern history of education has great variety and diversity. For example, in the early 20th century, seven cardinal principles were put forward in the United States to form the objectives of education: health, command of fundamental processes, worthy home membership, vocation, citizenship, worthy use of leisure, and ethical character (National Education Association, 1918). Furthermore, it is the view of some philosophers in 20th century that education should be aimed at developing an individual's full potential for their social and economic participation and for the nation as well (e.g. Burns, 2002; Dobinson 1957; Schmidt 1963). A similar point of view is expressed by Winch (2002 p.101), and he concluded three important aspects and combined them as the fundamental goal of education: 'individual fulfillment, civic participation and vocation'. It seems that a mix of aims and functions are reflected in different educational systems, and the various conceptions on this issue have been and will continue to be discussed in educational debate and policy. To sum up, there are at least four major roles envisaged for education – liberal role, socialization role, vocational and economic role, and transformative role, which 'at different times jostle', and they will be further discussed below (Sterling, 2001 p.25).

1) Liberal Role:

One of the roles of education is embodied in the Latin word 'educare', meaning to rear, to mould or to train (Craft, 1984; Sterling, 2001). There is a broad and similar understanding of education in the early Chinese context: education is 'a process not merely of acquiring information, but of training and shaping the whole person' (Fraser, 2006 p.531). The works of Fraser (2006) and Pring (2005) argue that people are empowered with the knowledge, skills, understandings, attitudes, dispositions, habits and aspiration by education to develop themselves and make sense of the world. Moreover, the character and virtues of a child, 'such as honesty, courage, wisdom, and nonviolence as well as intellectual virtues such as open-mindedness, critical thinking, generosity of spirit, and perseverance', should also be and can be developed towards being a refined and cultured person (Bianchi, 2007 p.513). Obviously, these abilities that education can nurture, enable people to live as humans, in other words, to think, act and experience in ways which far excel the capacities of merely animals (Fraser, 2006).

Along with the essential factors mentioned above, there is another important function of education. 'Educere', the second Latin word that can be used to define education, means to draw out or develop (Craft, 1984; Sterling, 2001). To fulfill this function, educators encourage people's diversity and their own distinctive personal development (Pring, 2005). Apart from common knowledge, skills and attitudes, they also strive for developing each person's capacities, curiosity and creativity (Bass, 1997). Xunzi, a philosopher in ancient China, noted that through different kinds of education, people would become dissimilar to a great extent in the aspects of their activities, moral character and later achievement (Li, 1979). Envisaging the changing world, a desirable education system is required to assume the responsibilities of providing opportunities to cultivate and stretch people's minds, training individuals to a full and independent personality, and thus enabling them to be capable of making choices on self-realization or other important matters and to make the best use of their abilities, personalities, minds, surroundings and circumstances so that they can accomplish the maximum in their lives (Anon, 2009; Bass, 1997; Hans, 1955; Winch, 2002; Yogi, 2008).

As Whitehead (1959) described, education is a liberal concern because it plays a vital role in stimulating and guiding people's self-development and self-fulfillment. No person is able to successfully complete the process of education without 'significant exposure' to educational functions, especially the above two. Both roles of education always empower people to be best equipped for their present and future lives (Bass, 1997).

2) Socialization Role:

Durkheim wrote that education is 'the image and reflection of society' (p.372). In this interpretation of education, an effective system is necessary for the replication and perpetuation of a society and its culture (Bass, 1997; Burns, 2002; Sterling, 2001). Firstly, there is a reciprocal link between humans, education and society. Humans themselves are 'natural social' beings, and education takes place 'within a social context' and is described as 'powerful generator of social capital' (Green, Preston & Janmaat, 2006 p.128). Education can be seen as a device which allows each new generation to receive what the former generation learned during their lives. Without that useful tool, each generation would have no choice but to discover knowledge and skills by themselves and be unable to maintain their society's essential continuity (Bass, 1997). According to Durkheim (1992 p.51), 'society can only exist if there exists among its members a sufficient degree of homogeneity. Education perpetuates and reinforces this homogeneity by fixing in the child, from the beginning, the essential similarities that collective life demands.' Moreover, educational activities perform crucial tasks for promoting personal socialization, which consist of formal and informal processes to enculturate the 'natural' person into a 'social one' (Chantia, 2006; Li, n.d.; Lindquist, 1970; Rosenbury, 2007). As referred to in the forgoing, education transmits more than basic knowledge. It passes on culture including the values, view of world and life, beliefs, attitudes, lore, customs, rites, rituals, ceremonies, techniques and some intangible, aesthetic and affective aspects 'that shape a society and govern its functioning' (Bass, 1997 p.129; Hansen, 1979 cited in Burns, 2002; Li, n.d.). Baig (2008), Burns (2002), Campbell (2008) and Parsons (1985) have expressed similar views that the education system is supposed to produce good citizens and leaders for the smooth operation and long-term survival of a society, which would otherwise, as Horace Mann argued, 'go

down to destruction' (The New York Times, 1953 cited in Singer & Pezone, 2003 n.p.). As Baig (2008) concludes, the state of education directly determines the health or sickness of a society.

3) Vocational and Economical Role:

In this view, the occupational division of labour is one of the requirements of social development (Li, n.d.), and education takes on as its mission the laying down of foundations of people's employment and careers (Campbell, 2008; Li, n.d.; Sterling, 2001; Yogi, 2008). Two types of education are deemed to prepare students for employment. The first is pre-vocational education, which is concerned with introducing 13-16 years olds to information, such as the basic principles of different jobs, their histories and their places in the economy and society, and practical acquaintance with what these jobs are like. Expected character and social skills also can be developed for children's future employment (Entwistle, 1970; Winch, 2002). However, as the British educational system might be said to have the opinion that young people do not have the ability to make informed choices about their own educational aims and their future occupation, no important vocational aims are set in their curriculum (Winch, 2002). Vocational education is the second type of education in the vocational and economical role. A directive of the EU Council of Ministers in April 1963, made it clear that vocational education 'enables every person to acquire the technical skill and knowledge necessary to pursue a given occupation and to reach the highest possible level of training' (Bainbridge & Murray, 2000, p.3).

In many countries, education has been conceptualized as the main vehicle for making technological progress, developing new methods of production and achieving economic prosperity (Baig, 2008; Bainbridge & Murray, 2000; Zou, 1985). Winch (2002 p.101) argues that the 'economic aims of education are as legitimate as any other', and there is a heavy responsibility on education to secure a healthy economy. An industrial-technological society needs to mobilize 'more literate, sophisticated, knowledgeable and highly skilled workers' (Hake, 1975 p.1) 'in the pursuit of economic growth and material well-being' (Zhamm & Kostanian, 1972 p.155). And education is

expected to meet this requirement. As Burns (2002) argues, education always plays an active role in increasing Gross National Product (GNP), which is referred to as 'a measure of the nation's annual production of goods and services' (Henry, 1981 p.511). 'Theoretically, this enables individuals to become more prosperous and upwardly mobile in the 'preferred' modern sector, and releases their talents and disposable income for societal development' (Burns, 2002 p.32). In short, education provides a qualified workforce for meeting a country's economic goals.

Due to the never-ending quest to obtain a competitive advantage, education in many countries is seen as the route towards improving the economy, promoting rapid technological advancement, strengthening employment and competitiveness (Anon, 2009). 'Employment of some kind' is deemed as a 'key life-aim' by most young people (Winch, 2002 p.103), however, Bianchi (2007) complains that school curricula overemphasizes the aim of economic success.

4) Transformative Role:

While education is considered as a dominant factor in keeping society operating, whether it can be allocated a prominent role in encouraging change towards a fair, just and healthy society has long been discussed. In the last century, Emile Durkheim and conservatives of that time dissented from the idea that education could be an important instrument of development and social change. He expressed his opinion that education 'imitates and reproduces the latter (society).....it does not create it' (Durkheim, 1951 p.372-373). Meanwhile, conservatives further argued that economy is the main influence to social change. Apart from that, nothing can change society, including education (Daniels, 2008 p.7). However, John Dewey (2001; 2007), the prominent American philosopher, psychologist and educational reformer, expressed his disagreement with these arguments. 'Social change is influenced by many factors such as historical, cultural, geographical, biological, demographical, political, economical and ideological factors' (Chantia, 2006 p.267), and the survival and thriving of a new society needs changes in the morals, mentality and culture (Dewey, 2001). As Dewey points out, economic change does not necessarily deliver other kinds of changes in society, whereas schools are

engaged in shaping morals, mentalities, beliefs, desires and cultures which could engender a great deal for social change. He supported the notion from the education philosophy of progressivism, which is derived from pragmatism, that society is continuously changing, which can be reflected, generated and guided by education. Others (e.g. Banks, 1968; Banks, 1993; Bass, 1997; Biersteadt, 1957; Dewey, 2007; Elvin, 1979; Hake, 1975; Li, n.d.; Sterling, 2001; The New York Times, 1953 cited in Singer & Pezone, 2003) have reinforced the same standpoint that education is a means for resolving social ills, expanding democracy, promoting political reform and creating other kinds of transformations of society.

If the role that education plays in the process of social change were true, how it participates in and promotes social transformation becomes a big question that needs to be answered. Firstly, indoctrination, which Dewey (2001) refers to as the teaching by that 'systematic use of every possible means to impress upon the minds of pupils a particular set of political and economic views to the exclusion of every other', occurred often in schools (p.229). Even though it is sometimes viewed by some educators as a proper way to reflect and produce changes in society (Daniels, 2008), Dewey argued that students' active participation and experimentation of ideas is necessary for education to achieve social change (Dewey, 2001). Moreover, both Maxine Greene (1993a; 1993b), an educational philosopher, and Paulo Freire (1995), who 'calls on educators to aggressively challenge both injustice and unequal power arrangements in the classroom and society' (Singer & Pezone, 2003 n.p.), discovered that learners can find out new questions about themselves and the world through education, and also can be stimulated to become 'agents of curiosity' in a 'quest for...the 'why' of things' when they are engaged actively in educational activities designed to resolve social problems. Greene's experiences tell her that this effect of learning always leads her to 'examine events from different perspectives, to value the ideas of other people, and to champion democracy' (Singer & Pezone, 2003 n.p.). Furthermore, education is also regarded as a process of continuous group discussion by Freire (1995). Shore (1987 cited in Singer & Pezone, 2003) concluded and listed the major roles of the teacher in this group dialogue: 'helping students identify problems facing their community (problem posing), working with

students to discover ideas or create symbols (representations), explaining their life experiences (codification), and encouraging analysis of prior experiences and of society as the basis for new academic understanding and social action (conscientization)'. As Dewey (2001 p.240) made clear, the idea of democracy could not be created or embodied by educators or schools alone, but they are capable of enabling people to be confident and prepared enough 'to use what they know' including collective knowledge 'and to apply it to their decision-making to improve society'. Burns has drawn attention to this issue from another standpoint. According to 'the humanistic 'foster individual talent' approach, a social intent is discernible: the person is a product of education, whose talent and creativity needs to be cultivated, in one narrative in order to serve the nation better' (p.24). A person, who behaves as an active and critical one, may be able to direct the process of social change, while the passive one is more likely to be a good worker and citizen to take part in their outcome (Burns, 2002).

The function of education towards social changes has been argued. For example, Frieden (1955 cited in Burns, 2002) and Haavelsrud (1981) advocated the powerful effect of education upon the establishment of a new Europe and the social change during the second half of 20th century respectively. Haavelsrud (1981) argued that education provides the leadership for the maintenance of fundamental social order in a changing society, fosters skills, attitudes and values to reform, and moulds people who will direct and participate in change towards a better society. Furthermore, the studies of Chantia (2006) of an India tribal group and Matsepe (2002) in Lesotho are two examples which analyse whether education is a useful tool for social change. Although education seemed not to bring about reductions in class distinctions between educated and uneducated people in the two places, both of the researchers discovered that education accelerated the process of social change in other spheres. According to the findings of Chantia's (2006) research, the tribal group of Dhankut was aware of the significance of education in terms of social changes. Most of them believe that 'education helps in eradication of poverty and gender bias', and provides decision making power, social mobility and 'the solution for all problems that arise on the social and individual level of a society' (p.267). The Dhankut has also illustrated that the ongoing progress of other communities was

brought about by education. In another piece of research by Matsepe (2002), adult education was proved to be an effective agent for the transformation of Basotho people's lives. Through education, they began to be conscious of their problems and 'social forces which confront them', and they gradually developed the ability to find answers to fundamental social questions, and their attitudes, perceptions of issues and behaviours have been changed in varying degrees.

From what has been discussed above, it can be established that education 'either supports the status quo or a potential new direction for society', which was considered as the key issue of social change by Thomas Jefferson (Singer & Pezone, 2003). Schools have the force to 'lead society down certain paths' (Daniels, 2008 p.9), which means that it is imperative to pay attention to the different directions that education can take (Dewey, 2001). Simultaneously, educators and schools must be 'knowledgeable in how to prepare students to accept and make social change', and move the world in the desired direction (Daniels, 2008; Dewey, 2001). Some attempts have been made to transform education in new directions. For example, peace education, which aims at fostering changes towards a more humane world by 'imparting specific values, attitudes, beliefs, skills and behavioural tendencies', have been included in some countries' educational systems, such as Australia, Japan and the United States. A common general goal of peace education programmes in these states is to 'diminishing, or even to eradicating, a variety of human ills ranging from injustice, inequality, prejudice, and intolerance to abuse of human rights, environmental destruction, violent conflict, war and other evils in order to create a world of justice, equality, tolerance, human rights, environmental quality, peace, and other positive feature' (Bar-Tal, 2002 p.28). In effect, favourable results in mobilising both teachers and students to join in a campaign for change and positive reactions on the part of both teachers and students were found (Bar-Tal, 2002; Fountain, 1999).

2.3.1.2 The links between the nature of education and sustainable development

As the UK's Secretary of State for Education stated in 'The Schools White Paper 2010', education enables individuals to obtain a fulfilling job, 'to shape the society around them

and to enrich their inner life. It allows us all to become authors of our own life' (Department for Education, 2010 p.6). Sterling (2001) also used the four roles above as the main functions of education. He pointed out that the four roles 'are mutually informing and enhancing', and education for sustainable development is ultimately devoted to harmonizing them, with the emphasis on the liberal and transformative ones. While the liberal view appears to stress 'intrinsic' values of education, the other three views are more likely to stress its 'instrumental' values. Education for sustainable development 'builds on the best of existing thought and practice in the liberal humanist tradition', but also is needed to educate for society and sustainability in this 'turbulent and rapidly changing world' (p.26). Of the four roles, the transformative one seems to be the most congruent with the United Nations' vision of sustainable development. With the rapid development of global technology and economy, some criticisms of the 'triumphant economy' are made (Jacquard, 1995 cited in Sauve, 1996). For example, Baker (2006) criticised the current model of development that it 'prioritizes economic growth, even though the heightened consumption patterns that it stimulates now threaten the very resource base upon which future development depends' (p.3). As a result of this, 'change' becomes the fundamental requirement for a sustainable future (UNESCO, 2005a). The UNESCO (1997 n.p.) paper stated that:

'Achieving sustainability will depend ultimately on changes in behavior and lifestyles, changes which will need to be motivated by a shift in values and rooted in the cultural and moral precepts upon which behavior is predicated. Without change of this kind, even the most enlightened legislation, the cleanest technology, the most sophisticated research will not succeed in steering society towards the long-term goal of sustainability.'

According to the speech of Jens Wandel (2011), the UNDP Deputy Director in Europe and the Commonwealth of Independent States, at the UNECE Regional Preparatory Meeting for Rio+20, the critical question for 2012-2022 is not transition, but a profound transformation 'to a sustainable model of economic and social development'.

Education is a significant investment in our sustainable future (GDRC, n.d.). The importance of education in the process of achieving sustainable development was made

explicitly by Agenda 21, the programme of action which emerged from the Rio Earth Summit in 1992. A full chapter (Chapter 36) on 'Education, Training and Public Awareness' declared that:

'Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues It is also critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development and for effective public participation in decision-making' (United Nations, 1992).

As Ban Ki-moon, United Nations Secretary General, stated, an unswerving, collective and long-term effort is required for taking this educational action to achieve SD targets (UNDP, 2010).

2.3.2 The concept of 'education for sustainable development'

Despite the fact that education is proclaimed at a high level as a key part of the solution for a more sustainable society, it is also likely to simultaneously be a threat to SD. Most traditional education, which takes no account of SD and educates people to 'compete and consume rather than to 'care and conserve', 'daily reinforces unsustainable values and practices in society' (Sterling, 2001). As McKeown (2002) makes clear, most educated nations tend to 'leave the deepest ecological footprints'. The figures from UNESCO Statistical Yearbook and World Education Report (2005a) indicated that waste generation and per-capita energy use in the United States, which has a lot of highly educated people, are among the highest in the world. Clearly, it is insufficient to simply educate citizenry to high levels for supporting a sustainable society (McKeown, 2002), and simply improving and following the traditional model of education, which is oriented towards vocational and economical goals, will possibly continue to destroy the planet (Gadotti, 2010).

Faced with this situation, a new concept of 'Education for Sustainable Development' aiming at promoting positive societal transformation (UNDESD, 2008), emerged at the international level at the 1992 United Nations Conference on Environment and Development (Ansell, 2006). Meanwhile, Agenda 21 set out proposals in its Chapter 36,

as the first international document on the description of 'education for sustainable development' (McKeown, 2002). Both environmental education and development education can roughly be considered as predecessors of ESD (Buckingham-Hatfield & Percy, 1999; ESD & GC, 2007; Haan, Bormann & Leicht, 2010; Rauch, 2002). However, ESD does not only focus on the two aspects of development, the economy and the environment, but takes a closer look at 'a new configuration of ecological, economic and social components' as well as the inter-linkages among them (Rauch, 2002 p.6; and also see Ansell, 2006; Haan, Bormann and Leicht, 2010). UNESCO, which leads the United Nations' effort to implement ESD worldwide (UNESCO, 2005a), recognized it as a catalytic process for positive social change and a visionary approach to education that seeks to foster 'the values, behaviours and lifestyles required for a sustainable future' (UNESCO, 2005a n.p.). While the vagueness and unspecificity of this concept has been debated (Haan, Bormann & Leicht, 2010), the definition of ESD from a report *Education for Sustainable Development in the Schools Sector* (CEE, 1998) was described in the following way:

'Education for sustainable development enables people to develop the knowledge, values and skills to participate in decisions about the way we do things individually and collectively, both globally and locally, that will improve the quality of life now and without damaging the planet for the future.' (p.3)

Education for sustainable development as a dynamic and powerful concept not only is a vehicle to achieve a positive long-term impact on SD, but also encompasses a challenge to education itself (Ansell, 2006; Rauch, 2002). ESD brings about a new motivation and a new direction for learning and action that helps people of all ages become empowered to assume responsibility for enjoying and creating a sustainable future (Haan, 2007 cited in Gadotti, 2010; Haan, Bormann & Leicht, 2010; Khataybeha, Subbarinia & Shurmana, 2010). It has been acknowledged in many works (e.g. An, n.d.; Ansell, 2006; Huckle & Sterling, 1996; Sterling, 2001; Tilbury, 1995 cited in Buckingham-Hatfield & Percy, 1999) and affirmed by UNESCO (Gadotti, 2010; Khataybeha, Subbarinia & Shurmana, 2010; UNESCO, 2005a) that meeting and responding effectively to current and future challenges largely depends on the reorientation of existing education at all levels towards SD, including rebuilding educational systems, re-examining many educational policies,

programmes and practices. Gadotti (2010), Haan, Bormann and Leicht (2010) and Howe (2009) advocate that ESD is undertaken in all areas of education and education levels, but formal education seems to be paid more attention than informal: topics about 'rethinking and revising education from nursery school through university' are repeatedly emphasized and discussed, including in some guiding documents, such as the document for the Decade of Education for Sustainable Development (DESD) (Khataybeha, Subbarinia & Shurmana, 2010 p.600; United Nations, 1992; UNESCO, 2005a). It is expected by a lot of experts and organisations (e.g. Ansell, 2006; ESD & GC, 2007; Gadotti, 2010; Tilbury, 1995 cited in Buckingham-Hatfield & Percy, 1999; McKeown, 2002; Meadows, Meadows & Randers, 1992; Ofsted, 2008; UNESCO, 2007) to integrate more principles, skills, values and holistic thinking related to SD into all aspects of education practices and the school curriculum with a more innovative and appropriate pedagogy to enable people to develop and evaluate alternative visions of a sustainable future and work to collectively fulfill these visions.

2.3.3 The methods used by education for the achievement of sustainable development

Both 'action' and 'behaviour' are key components of ESD. According to UNESCO, the end goal of ESD is inclusively empowering 'all people to take charge, cooperate and create a sustainable future' (UNESCO, 2011a n.p.). ESD aims to encourage and inform individuals to make decisions and take the necessary actions on what they have learned to 'mend the damage already incurred and avoid further damage to the earth', rather than simply absorbing information and acquire knowledge for examinations (ESD Working Group, Education Committee, 2008; Haan, Bormann & Leicht, 2010; SOS Children, 2005; UNESCO, 1992 cited in Howe, 2009; United Nations General Assembly, 2010 p.10). Moreover, some educators are firmly convinced that learning effectively for SD should and can manifest itself in changes in learners' behaviours to contribute to more sustainable lifestyles (Blumstein and Sayan, 2007; Howe, 2009; Soerjani & Hal, 1997). However, as Rauch (2002) makes clear, it tends to be impossible to directly teach specific patterns of behaviour or develop solutions to a series of unsustainable problems

in educational institutions and schools. As a result of this, how education gradually achieves the ultimate aim of ESD becomes a new debatable topic and will be further explored in the following paragraphs.

Education is indispensable to developing individuals' knowledge, understanding and skills of SD. The process of implementation and assessment of SD requires people's comprehensive knowledge of the principles of SD and a much better understanding of potential economic, cultural, and social factors (Buckingham-Hatfield & Percy, 1999; Holmes, 2003; Joy, 1998; Macnaghten, 1995 cited in Huckle & Sterling, 1996). For example, Aipanjiguly, Jacobson and Flamm (2002) demonstrated that greater knowledge and understanding about manatees were positively correlative with the support for manatee conservation. Nevertheless, it has been pointed out that the language of experts frequently 'act[s] as a barrier to many individuals and groups' (Knightsbridge-Randall, 1999 p.87), and the incomplete understanding of socio-economic factors and the lack of 'sustainability literacy', the phrase employed in the UK's strategy for SD (HM Government, 2005), has been a prevalent factor in the ongoing unsustainable crises (Gardner, 2004; Knightsbridge-Randall, 1999). Moreover, the relevant fundamental skills of SD, which are of vital importance, also need to be promoted (LTS, 2010; Wu, 2007; Zhang, 2009). UNESCO (2005a) has called for fostering skills for SD, including creative and critical thinking, collaboration and cooperation, decision-making, conflict management, problem-solving and planning. Faced with these tough tasks, education, which is regarded as 'systematic training and instruction designed to impart knowledge and develop skill' (OED, 1990 cited in Howe, 2009 p.9), should be able to meet all the demands that are discussed above for the achievement of SD, since the acquisition of knowledge, understanding and skills appears to be the original role of education. Simultaneously, Sauve (1996 p.25) more explicitly argued that education not only has a positive influence on 'the transmission of predetermined knowledge', but also on 'the production of new knowledge and understanding in a co-operative and critical process'. In addition, The Earth Summit's Agenda 21 carried forward the message of the Brundtland Commission and affirmed that education can be adopted as a way of empowering people with the skills needed for SD

and 'the capacities to act and live within the limits of the earth' (Zhang, 2009 p.10; and also see Ansell, 2006; Buckingham-Hatfield & Percy, 1999; Jia, 2002; Joy, 1998; Soerjani & Hal, 1997; SOS Children, 2005).

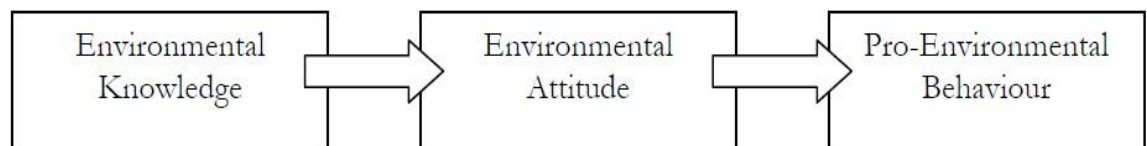
Furthermore, education has also been shown to be correlated with positive awareness and attitudes, which is defined as 'feelings, values or beliefs' of individuals (Henerson et al., 1987 cited in Howe, 2009 p.12). The necessity of developing citizens' awareness and attitudes towards SD is always highlighted as another fundamental aim of ESD. The World Conservation Strategy-'Caring for the Earth' (IUCN/UNEP/WWF, 1991 cited in Tilbury, 1995) emphasized 'the importance of an ethic for living sustainably' and noted that an essential change in people's awareness and attitudes is required to create a more sustainable future. A Chinese teacher and writer on education expressed a similar viewpoint that 'the success or failure of environmental work in the coming century depends on peoples' environmental consciousness' (Stimpson & Kwan, 2001 p.403). However, a large number of people probably have little interest in and awareness of sustainability to address their SD concerns (Huckle & Sterling, 1996). As the result of Yan's (2007) research and The Environment Conference Survey Report of 18 countries in 2006 (Khataybeha, Subbarinia & Shurmana, 2010) indicate, weak awareness programmes, which fail to eradicate many people's deficiency of awareness and their negative attitudes, is the key cause for environmental deterioration, inequality, poverty and other unsustainable phenomena. At the same time, Yan (2007) reminded environmentalists and educators of the potential of education and argued that education is the optimal solution to this problem. The action for SD depends on people's positive awareness and attitudes, which largely depends on education (Gadotti, 2010). Sterling (Huckle & Sterling, 1999 p.1) considered education as 'a process that develops people's awareness, competence, attitudes and values', which enables 'them to be effectively involved in SD at local, national and international levels, and helping them to work towards a more equitable and sustainable future'. Both formal and non-formal education, as stated in Chapter 36 of Agenda 21, are critical for promoting the achievement of ethical awareness, values and attitudes inherent to SD (Ansell, 2006; Jia, 2002; Joy, 1998; Soerjani & Hal, 1997; UNESCO, 1992 cited in Howe, 2009). Formal education can

be adopted 'as a predictor of local attitudes' (Mehta & Heinen, 2001 cited in Howe, 2009 p.13), and the school system is regarded by Kwan and Lidstone (1998) as the ideal and appropriate way to transmit the attitudes and values for achieving SD. As Wang and Wang (2004) concluded, education is about ensuring people not only acquire knowledge, understanding and skills of SD, but also change their attitudes towards unsustainability and form new positive values and awareness to enable them behave appropriately for social, environmental and economic development.

Although it has been agreed by scholars and organizations cited above that the development of knowledge, understanding, skills, awareness and positive attitudes are associated with and conducive to the achievement of SD, the concrete process of enacting positive behaviors is still not so clear. Due to few works in the areas of ESD that drew attention to this topic, the different ideas and opinions from writers in the academic field of environmental education, which is the main precursor of ESD, has been analysed. 'Behaviour' has been defined as 'the decisions, practices and actions of people, as individuals and as groups' (Byers, 1996 p.1). According to the findings from recent research, neither knowledge nor skills or attitudes and awareness of environmental issues alone, are adequate to bring about 'pro-environmental behaviour' (Hungerford & Volk, 1990; Kollmuss & Agyeman, 2002 p.240; Palmer, 1995). For instance, it is the view of Howe (2009) and Wicker (1969) that attitudes, which may be effectively shaped by initiatives and education, cannot automatically lead to behavioural changes. And it is evident that increased knowledge does not always elicit positive behaviours towards SD (Kollmuss & Agyeman, 2002; Somers & Surmann, 2005). Consequently, the correlation and the interaction among these essential elements of ESD, and their combined effects upon a change in behaviour have been investigated by some environmentalists and educators. There are a number of different explanations for the emergence of pro-environmental behaviour. The 'oldest and simplest' model was proposed during the first half of the 20th century (Howe, 2009; Kollmuss & Agyeman, 2002 p.241). The proponents of this model assume attitudes as the key predictor of human being's performance of behaviour and consider that the environmental attitudes that a person holds might be affected by his or her ecological knowledge and understanding of the

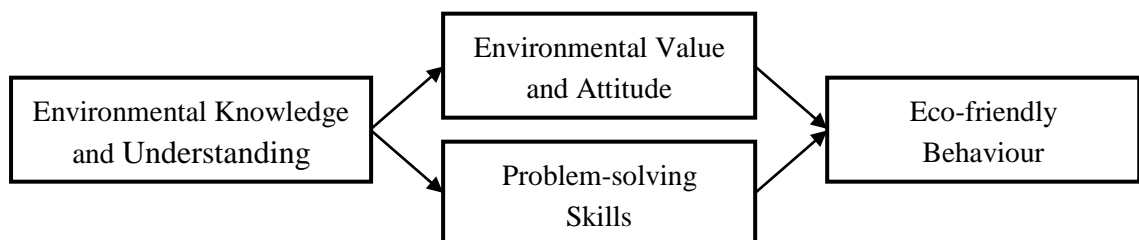
related issues (Caro, Pelkey & Grigione, 1994). This model was summarised by Kollmuss & Agyeman (2002) as shown in Figure 2.1. In Figure 2.2, Yan (2007) has adapted this model to add that a responsible environmental manner requires the combined effects of knowledge, values, attitudes and skills. A theory of Planned Behaviour, uses an attitude-behaviour framework (see Figure 2.3), and advocates predicting behaviour by using 'intentions', which are based on an individual's attitude toward behaviour, the perception of social pressure and the awareness to behave in a particular way (Jacobson, McDuff & Monroe, 2006). Three types of attitudes that are governed by behavioural beliefs, normative beliefs and control beliefs, are suggested to contribute to the intention (Howe, 2009; Jacobson, McDuff & Monroe, 2006). In all three models, it is suggested that attitudes, which are shaped by knowledge, understanding and skills, seem to be the most crucial stimulus to the pattern of behaviours.

Figure 2.1: 'A linear model of promoting pro-environmental behaviour'



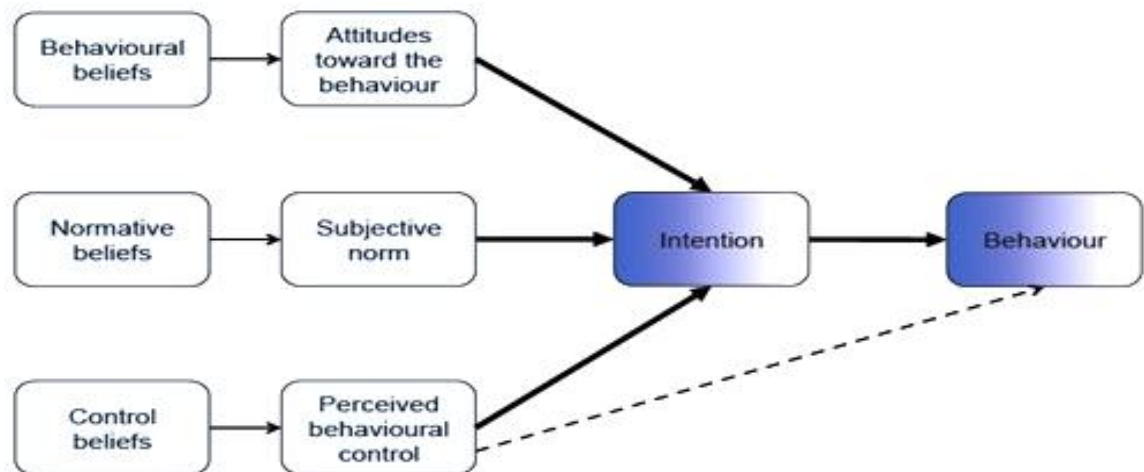
Source: Caro, Pelkey & Grigione (1994) via Kollmuss & Agyeman (2002)

Figure 2.2: Yan's ESD framework



Source: Yan (2007)

Figure 2.3: An attitude-behaviour framework



Source: Jacobson, McDuff & Monroe (2006)

To sum up, sustainable development, which requires a fundamental change of each person's mind and behaviours, cannot be achieved without the appropriate development of the capacity of people as well as more emphasis placed on ESD than before (Haan, Bormann & Leicht, 2010; Masakazu, 2005). Therefore, 'the key values to promote, key capacities to develop, and key operational features of education for sustainable development are being discussed by experts, education practitioners, academics and officials in different areas' (Masakazu, 2005 p.136).

Music education, as an important branch of basic education in many countries, is referred in some articles and documents of ESD. For example, in the ESD toolkit of the Government of Manitoba, Canada (2011 p.13), arts education, including art, music, drama and dance, which 'provides opportunities to express the ESD themes', is suggested to be integrated into the curriculum and to be linked with the activities of sustainable development as well. According to the guiding educational principles of United Nations Decade of Education for Sustainable Development (2005-2014), multi-method approaches, such as art, drama, music, work, debate, etc., should be promoted to break down the disciplinary boundaries of ESD (UNESCO, 2005b). As Peng (2008) argues, it is necessary to take 'education for sustainable development' as an element of music teaching. However, the potential positive effects of music towards SD are under researched to date. As a result of this, an examination of the nature and

impacts of music education will be provided in the next section. Moreover, since music is an important part of arts culture, and different kinds of arts may share attributes regarding education, the next section will give a brief overview and discussion of arts education, specifically about performing arts.

2.4 Arts education

The arts, as ‘a vast subdivision of culture’, is considered to be a key learning area as important as mathematics, science, ICT and other widely accepted education disciplines (Crowe, 2006; Jasbi & Frmanfarmaee, 2010 p.503; Jensen, 2001). In a thematic report of QCA⁷'s projects, Sharp and Le Métais (2000 p.5) described the arts as ‘an indispensable component of a well-rounded education’. The importance of the arts in education was stressed by the Gulbenkian Foundation publication ‘Whither the Arts’ (1995 cited in ASME, 1999), which noted that the presence of arts is fundamental to ‘the soul, spirit and culture of the school, and the full development of all its pupils’ (p.10). It is the view of Jensen (1998, 2001) that arts are not only essential to people’s growth as human beings, but also helpful to lay the foundation for later success in the ‘demanding, highly technical and fast-moving world’ (2001 p.vii). CNAEA⁸ (1994) also presented a similar conclusion: ‘the arts are inseparable from the very meaning of the term education’ (p.5). It goes on to remark that a society and people without the arts are how ‘breathing would be without air’, and it believed that ‘such a society and people could not long survive’ (p.5).

With the popularization of arts education in many countries, some educators begin to draw attention to the role of arts in the development of non-arts based skills and knowledge. As Russell-Bowie (2006) points out, ‘using the arts to connect with other key learning areas may certainly enhance the learning experiences of children who learn kinaesthetically, visually or musically, may help them achieve outcomes in key learning areas where previously they have failed and may also provide all children with enjoyment and motivation’ (p.5). The members of REAP⁹ (2000) implemented by Project Zero (USA)

⁷ QCA: The Qualifications and Curriculum Authority.

⁸ CNAEA: The Consortium of National Arts Education Associations.

⁹ REAP: The Reviewing Education and the Arts Project.

expressed a similar view to Russell-Bowie that children who are involved in the arts can do better at school, in reading, writing and understanding scientific and mathematical concepts. It is worth noting that this has also been demonstrated by Ho, Matthews and Mitchell (2005). Reports by Ofsted and a Parliamentary Select Committee have revealed that Creative Partnerships, which was the UK Government's creative learning programme in England from 2002 to 2011 designed to bring creative professionals into school to provide new ways for students to engage with subjects, has had a positive impact on every person involved: young people, teachers, creative workers and schools as well as parents (CCE, 2010a). Regarding learners, findings show that this programme was effective in most schools not only in the improvement of confidence, and the development of personal and social skills, but in the attendance and academic progress in areas such as literacy, numeracy and information and communication technology (ICT). Both parents and headteachers perceived this new way of teaching as offering alternative long-term benefits for children's learning (CCE, 2010a). Given these benefits, it is disappointing that the Government withdrew funding from Creative Partnerships Programme in 2011. Paul Collard, Chief Executive of arts education charity Creative, Culture and Education (CCE) (CCE, 2010b n.p.) explains that although it 'has had a positive impact on the attendance, aspirations and attainment of children and young people, particularly in schools with challenging circumstances', 'young people in some of the most disadvantaged communities' that 'we have worked with will have nowhere else to turn, particularly when the impact of cuts elsewhere filter down through local authorities and other programmes'. He also believes that 'a whole generation of young people will grow up without having had access to the arts and this is not something that can be fixed once public finances are restored' (CCE, 2010b n.p.).

However, according to REAP (2000), the arts should never be justified for whether they can assist in the teaching of other subject areas, but in terms of how and what the arts can assist and teach that no other subject can. It has been substantiated that the arts enhance young people's engagement with learning (Ho, Matthews & Mitchell, 2005). Jenson (2001) found that after artistic activities of any kind, 'the feel good chemicals of noradrenaline and dopamine are running higher in the brain' (p.83). Human's brains may

be designed for the arts (Jenson, 1998), and that is why learners can gain enjoyment, confidence and develop cognitive and emotional ‘intellectual muscle for paying more careful attention, recording more accurately’ and thinking more deeply (Crawford, 2004 p.11; Paterson, 2004). The argument was supported by Laitta and Weakland (2002), who claim that brain research has also indicated that physical skills and emotional responses, which often emerge during artistic activities, ‘increase the strength of memory pathways and improve the chance that learning will ‘stick” (p.xiii). Moreover, for most students, ‘the arts provide a natural route for connecting curriculum in a personally meaningful way’ (Crawford, 2004 p.8). The artistic and aesthetic dimensions of human experience that the arts develop, offer the modes and ways of experiencing, learning and thinking unavailable in other disciplines (Booth, 2004; REAP, 2000; The Arts in the New Zealand Curriculum, 2000 cited in Crowe, 2006). Through arts experiences, students are motivated to ‘think not only creatively, but also analytically and critically’ and are provided opportunities to ‘question, explore, investigate, think, create, analyse, judge, invent, appreciate, feel, imagine, enjoy, solve, reach consensus, evaluate, reflect, communicate, apply information and cooperate’ in a positive and safe environment (Booth, 2004; Crowe, 2006 p.47; Harland et al., 2000; Mathews & Cleary, 1993 cited in Crowe, 2006 p.41). As Jenson (2001) concludes, ‘we need more of the arts because they can do more of that than any other discipline’ (p.10).

Arts education, with ‘experiential, affective and embodied approaches to learning’, can therefore be expected to offer a dynamic way to increase the relevance and power of education for sustainable development, as well as being used efficaciously to support the call for the integration of a wider variety of views in ESD (Inwood, 2007 p.8). The similar assertion on the need for more arts-based approaches to ESD has been claimed by Adams (1991), Graff (1990), Gurevitz (2000) and Lindholdt (1999 cited in Inwood, 2007). Firstly, ‘the desire to learn’ can be motivated and enhanced through engagement with the arts (Crowe, 2006; Riley, 2000). Gardner (2004) makes clear that the arts do seem capable of drawing attention to different environmental problems, which is the first step towards social change. Furthermore, both Knightsbridge-Randall (1999) and Orr (1992) argue that it is hard to instill ecological literacy and other complex ideas about SD in

young people through the traditional lecture hall unless incorporating it into various subject areas such as the arts. The 'values-based, subjective orientation of affective learning' and emotional and imaginative connection, which are missing in much environmental education, are more likely to be typically found in arts education. Inwood (2007) and the Australian Secretary of Education (cited in Crowe, 2006) stated that learning SD with the two above qualities can not only influence learners' environmental attitudes but may also lead to shifts in their behaviours towards SD. If arts education can be involved in children's learning activities of sustainability, they are able to 'develop values concerning their environment, a sense of belonging and of commitment to sustainable development' (UNESCO, 2006 p.19). In addition, according to the UNESCO Decade for ESD website, learners are recommended to be provided with many more opportunities to develop 'skills for creative and critical thinking, oral and written communication, collaboration and cooperation, conflict management, decision-making, problem-solving and planning.....and practical citizenship' (UNESCO cited in McNaughton, 2008 p.274). Though some people feel that the arts are 'ill-equipped to solve environmental problems on their own' (Gardner, 2004), learning SD in the arts can develop all of these skills more easily and effectively (Crowe, 2006; Jensen, 1998; Mathews and Cleary, 1993 cited in Crowe, 2006; McNaughton, 2008). Devon County Council in England identified the important function of the arts in terms of developing the skills of critical thinking and communication. It found in its project that it is efficacious to use various kinds of arts as a medium to encourage young people to think, reflect and honestly express their views on sustainability (Knightsbridge-Randall, 1999).

'The arts' is a broader term than 'art' and encompasses many 'creative endeavors and disciplines' (Jasbi & Frmanfarmaee, 2010). Generally, it can be divided into performing arts which are 'performed before an audience', such as dance, drama, music and theatre; and visual art that 'appeals primarily to the visual sense and typically exists in permanent form' such as painting, photography, sculpture etc. (Crowe, 2006 p.17). Compared to most kinds of visual art, such as drawing, painting and design, providing a 'window' into people's thoughts and feelings to contribute to ESD (Thomas & Silk, 1990 cited in Laura, 1999), the key link between ESD and the performing arts may be made through more

imaginative active, participative experiential learning (McNaughton, 2008). However, as discussed in Section 1.1.2, it is hard to uncover any in-depth case studies of actual practices to inform the link between music and ESD. For the purpose of fully understanding the modes that the performing arts employ to stimulate and facilitate meaningful learning for sustainability, drama, which has been successfully employed as an educational tool in the teaching of SD, will be taken as an example to be discussed in the next section.

2.4.1. Drama

There are two distinctive methods to using drama as a medium of learning: Theatre-in-Education (TiE) which ‘uses theatre as a teaching-learning tool for advancement’ (Belle Branscom, n.d. n.p.), and Drama-in-Education (DiE) which is also known as classroom drama. In contrast with the more formal process of TiE, DiE takes place in a classroom, and takes advantage of improvisation and role play to empower the students and the teacher to be directly involved in the actions (Gale, 2008). The drama learning now discussed here will focus on Drama-in-Education.

Drama, which incorporates a special type of experiential learning, could bring positive contributions to building up participants’ understanding of SD issues (Crowe, 2006; Gabriel, 2001; Gale, 2008; McNaughton, 2008; Powell, 1995; Swasbrook, 1997 cited in Crowe, 2006). With students’ building and developing fictional contexts, especially the selection and construction of characters, the concepts and knowledge of SD can be gradually developed and better understood during drama lessons (Bruner, 1996 cited in McNaughton, 2008; Crowe, 2006; Gale, 2008; Selly, 1999). For example, learners might find it easier to understand and remember the environmental issues encountered in the fictional context of a drama than those presented in a lecture (McNaughton, 2008). Drama seems to be able to enable those who participate to gain a deeper understanding of how things work or why events happened as they did, and to see the meaning behind their actions (McNaughton, 2008; Wagner, 1999). People who engage in learning through drama can be encouraged to imagine environments through experiences that

they may never have confronted, and also can be allowed to understand by doing, which has the potential to foster positive attitudes and behaviour towards SD (Crowe, 2006; Gale, 2008).

As SOED¹⁰ (2000 p.10) stated, to understand ‘conflicts of interest in the social, physical and natural world’, young people have to be able to analyse ideas from diverse viewpoints so as to develop informed attitudes. Drama, which is driven by conflicts, problems or complications (Baldwin & Hendy, 1994; Bolton, 1984 cited in McNaughton, 2008; Neelands, 1984), may be particularly useful in exploring different feelings, perspectives and values on an issue, through improvisation and acting (McNaughton, 2008; Neelands, 1992; Nicholson, 1999 cited in McNaughton, 2008; The Victorian Curriculum and Standards Framework II, 1995 cited in Crowe, 2006). Nicholson (1999 cited in McNaughton, 2008) discovered that drama is not in itself about fact-gathering or the acquisition of skills, rather, it employs different ‘languages’ – ‘Visual, aural, kinaesthetic/tactile and verbal’ (p.37) to artistically represent feelings and beliefs. The still images, thought tracking or extended pieces of role-play can provide the participants with insights into a range of perspectives on an issue and help them take an informed stance (Nicholson, 1999 cited in McNaughton, 2008; Simpson, 2006b; Taylor, 2000). Furthermore, the stories, on which dramas are based, which can be viewed as metaphors for life (O’Neill, 1996), are another key strategy to be used as a learning medium for ESD. According to the evidence presented by McNaughton (2008), engaging learners in the stories behind SD may allow them to ‘go beyond the literal to explore the connotative meanings created through the verbal and physical engagement with ideas’ and also help them to examine their values and behaviours for sustainable living (p.41).

There seems to be a consensus that the goal of ESD, to live more sustainably in the future, requires that people should be equipped with the skills to be able to find solutions to problems and take actions for a positive transformation (Gale, 2008; Jensen & Schnack, 2006; McNaughton, 2008). Learners, through the process of improvising and

¹⁰ SOED: The Scottish Office Education Department.

imagining through exploratory drama activities, are encouraged to envision and 'devise alternative modes of action, alternative projects and solutions' (Crowe, 2006; McNaughton, 2008; O'Neill, 1995 cited in Gale, 2008 p.162). Weininger (1986) found that students who were engaging in imaginative dramatic play, were more likely to speculate about possibilities and outcomes when trying to discover ways to cope with problems arising from the drama. A similar phenomenon appeared in Simpson's research on drama education (Simpson, 2007 cited in McNaughton, 2008), in which children from three case study schools took 'part in speculation, hypothesis making and testing, searching for reasons and making justifications rather than looking for the 'right' answer' (p.31). Additionally, Huckle (2002) and Palmer (1998) identified that all of the above skills are necessary for undertaking stewardship for SD. Moreover, within the fictional context of drama, learners tend to develop their skills in, for instance, planning, organizing ideas, cooperating, as well as making their decision autonomously. To sum up, as Gale (2008) stated, drama has significance in ESD because of its potential for confronting and solving controversial issues.

2.4.2 The role of music

Along with the development of multimedia technology, music, as one of the performing arts, has already become a part of most young people's everyday life. Lyle and Hoffman (1972) have shown that half of adolescent participants in their research listened to music for three to four hours per day. This finding has been further demonstrated in North, Hargreaves and O'Neill's (2000) study in the UK. Moreover, a number of studies (e.g. Bjurström and Wennhall, 1991 cited in North et al., 2000; Fitzgerald et al., 1995) reported that young people valued music above all other leisure activities. This stimulated me to consider whether music can, like drama, be used as an instrument in learning SD.

The way of defining music has long been a subject of contestation among musicians, philosophers, and more recently, physical and social scientists. As Askew (1993) pointed out, definitions of music can vary according to era, culture and social context, and

different definitions can be given by different people. Clifton (cited in Tenny, 1985 p.201) put forward an 'operational definition' of 'music' as 'an ordered arrangement of sounds and silences whose meaning is presentative rather than denotative.....To be more precise, then, I should say that music is the actualization of the possibility of any sound whatever to present to some human being a meaning which he experiences with his body – that is to say, with his mind, his feelings, his senses, his will, and his metabolism'. The definition of music given in dictionaries is repeatedly cited in professional works (e.g. Crowe, 2006 p.16; Grice, 2006 p.3): '(Music is) the art of arranging sounds in time, so as to produce a continuous, unified, and evocative composition, as through melody, harmony, rhythm, and timbre. Vocal or instrumental sounds possessing a degree of melody, harmony, or rhythm'.

From a theoretical point of view, there is little doubt about the place and importance of music in human life, and 'the argument that music education is merely 'frills' finds no objective support' from a practical view (North, Hargreaves and O'Neill, 2000; Weinberger, 1995 p.3).The significance of music education has been emphasized for centuries (Bunt, 2003). For instance, Plato (2001) stated that 'musical training is a more potent instrument than any other, because rhythm and harmony find their way into the inward places of the soul', and Prokofiev, the composer from the former Soviet Union, noted that music can guide people towards a bright future (Xue, 2006). As a result, for the query – 'Can music be used as an instrument in learning sustainability?', a good starting point would appear to be deep concern and an examination of the concrete value of music education (Reimer, 2002; Westerlund, 2008).

By and large, two main values and justifications of music education are discussed by educators: 'aesthetic' or 'musical', and 'utilitarian'. Westerlund (2008) makes a distinction between them: the aesthetic rationale as the intrinsic value always refers to the musical and artistic purpose of music education, while the utilitarian rationale, referring to a variety of non-musical educational benefits, is the extrinsic or instrumental values of music education. However, the final goal of studying music is debated by some people. Some consider that the instrumental value as complementary contributions to music

study cannot be counted as the goal or an indicator of music education otherwise music might merely be an instrument for extra-musical achievement (e.g. Reimer, 2000). It is the view of others that studying music is not only a means to achieve musical and artistic ends, rather, the ultimate purpose of music education is extra-musical development which can make clear how music is different from other subjects taught in schools (Elliott, 1995; Westerlund, 2008;). Both have been recognized by education departments in several countries, such as Australia and China (Crowe, 2006; Ministry of Education of the P. R. China, 2001). In England, QCA has confirmed the significance of music in young people's mental and personal development, and formulated a statement of aims of music education in both aspects respectively:

'Music education encourages active involvement in different forms of music-making, both individual and communal, helping to develop a sense of group identity and togetherness. Music can influence pupils' development in and out of school by fostering personal development and maturity, creating a sense of achievement and self-worth, and increasing pupils' ability to work with others in a group context (extrinsic value). Music learning develops pupils' critical skills: their ability to listen, to appreciate a wide variety of music, and to make judgements about musical quality. It also increases self-discipline, creativity, aesthetic sensitivity and fulfillment (intrinsic value).' (QCA, 2007 p.2)

Throughout the past decades, there has been growing speculation about the potential non-musical benefits of music for young people, which 'has stirred interest among parents, educators, and politicians alike, and has precipitated a large industry of musical products targeted at infants and children' (Črnčec, Wilson & Prior, 2006 p.579). Some researchers are inclined to question this (e.g. Chabris, 1999; McKelvie & Low, 2002), nevertheless others (e.g. Hallam, 2010; Lenton, 2002) firmly believe that music education can play a vital role in human development in many ways, including academic skills, intellectual development, personal and social development and therapeutic functions. For the purpose of this study, the 'utilitarian' value of music will be drawn on, and the four beneficial utilitarian effects of music, which commonly get most attention, will be discussed respectively below.

1) Academic achievement:

The benefits of music education on broader academic achievement is not a new topic for discussion (e.g. Earhart, 1920 cited in Črnčec, Wilson & Prior, 2006). As Page (1995) pointed out, ‘the brain seems to work musically- learning with the aid of music becomes almost effortless. It is no coincidence that so many of us learned the alphabet through ‘The Alphabet Song’ (p.11). However, the potential of music, which is viewed as a vehicle for learning and a powerful force in the classroom (Ramsey, 2002), is vastly overlooked (Lenton, 2002).

Compared with the ‘early speculation’ that largely originated from ‘anecdotal observations’ (p.581), now, it often stems from empirically-driven research ‘with a coherent theoretical basis’ (Črnčec, Wilson & Prior, 2006 p.579). Evidence from many studies (e.g. Barr et al., 2002 cited in Hallam, 2010; Cadarelli, 2003; Morrison, 1994; Trent, 1996 cited in Hallam, 2010; Weinberger, 1995) shows that there is a strong relationship between young people’s academic performance and their participation in music activities, and students who are actively engaged in music programmes tend to do better on many measures of academic achievement than those who are not involved, especially for reading (e.g. Anvari et al., 2002; Butzlaff, 2000; Douglas & Willatts, 1994 cited in Hallam, 2010; Long, 2007), writing (Standley & Hughes, 1997; Register, 2001), mathematics (e.g. Gardiner et al., 1996 cited in Hallam, 2010; Geoghegan & Mitchelmore, 1996; Haley, 2001; Vaughn, 2000) and physical education (e.g. Anshel & Marisi, 1978 cited in Hallam, 2010; Karageorghis & Priest, 2008; Schlaug et al., 2005). In contrast, several studies found no difference in achievement of other subjects between students receiving musical education and control groups (e.g. Costa-Giomi, 2004; Hines, 2000 cited in Hallam, 2010; Vaughn, 2000; Kemmerer, 2003 cited in Hallam, 2010). For these conflicting research results, Schellenberg (2001) and Hallam, (2010) proposed that these researches consist of a special combination of factors, such as the type of musical training, the length of learning time and attention, which may lead to a transfer to other areas of study. Obviously, further studies are required before any effect of music education on academic achievement can be determined.

2) Intellectual development:

From the 1990s, an increasing number of studies focused on the impact of active engagement with music on intellectual development (Hallam, 2010), including 'spatial ability'. Many studies (e.g. Bilhartz, Bruhn & Olson, 2000; Hetland, 2000; Rauscher, 2002; Weinberger, 1995) found a strong and reliable relationship between music training and visual-spatial intelligence and the role of music in this area of development has been confirmed: young people participating in the music group scored significantly higher in the different spatial tests than those who did not. A meta-analysis of experimental studies was performed by Hetland (2000). Though Costa-Giomi (1999) considered that music training may provide a relatively short-lived developmental advantage (less than two years), Hetland presented her opposite view that active music instruction should be continued for at least two years for the enhancement of spatio-temporal performance and strongly emphasized the significance of learning standard musical notation in the process of cultivating spatio-temporal ability simultaneously. Moreover, some experts' opinion that early childhood is a crucial period for the development of spatial reasoning ability (Chen, 2006), has been examined in Hetland's work, and she found that music instruction offered to younger children (before five years) might be associated with greater impacts. Hetland also explored the relationship between the effects and different type of instruction, and concluded that any style of training can produce benefit, in spite of the greater impact that is more likely to occur in individual lessons than group lessons.

Apart from spatial development, other research paid attention on more general manifestations of intelligence. Firstly, due to a unique mode of educational experience that music lessons provide (Schellenberg, 2004; Bloomfield & Childs, 2000), it seems that better memory ability can be enhanced by musical study (Bilhartz et al., 2000; Ho, Cheung & Chan, 2003; Lenton, 2002). As Hallam (2010 p.10) points out, 'there were neuro-anatomical changes in the brains of children who were engaged in making music', and 'the left cranial temporal regions of the brain, which are involved in processing heard information' can be enlarged during the musical activities (Chen, 2006; Hallam, 2010). In addition to this, the hypothesis that music learning facilitates other kinds of intellectual development, such as sequencing skills (Hurwitz et al., 1975 cited in Hallam, 2010),

auditory intelligence (Bloomfield & Childs, 2000) and the ability of cognition (Rauscher et al., 2007 cited in Hallam, 2010), has been examined and demonstrated.

3) Personal and social development:

Harland (2000) revealed that the most frequent overall effects on young people derived from engagement with music in school were linked to their personal and social development, despite the fact that it has received less attention than the issues discussed above. Research in both Switzerland and USA showed that involvement in group music training enables learners to enhance their social skills and the ability of social adjustment (Spychiger, et al., 1993; Zulauf, 1993 cited in Hallam, 2010). Specifically, it was found to help learners to understand how to 'support each other, maintain commitment and bond together for group goals' (Sward, 1989 cited in Hallam, 2010 p.18), and increases their confidence to enhance their communication skills (Tolfree & Hallam cited in Hallam, 2010). Reflecting on previous group and classroom music activities, participants reported that there was an increase in social cohesion within the group and class, and 'benefits in terms of pride in being an active contributor to a group outcome, developing a strong sense of belonging, gaining popularity and making friends with 'like-minded' people' (Hallam, 2010 p.18). These benefits may lead to the development of personal skills, for instance, higher self-esteem, greater self-reliance, increased motivation for study and self-efficacy to a certain degree (Broh, 2002). The correlations between these types of personal skills between the active and creative participation in music have been demonstrated in some studies (e.g. Costa-Giomi, 2004; Lenton, 2002; Weinberger, 1995) and have also been written into England's music teaching guidelines (QCA, 2007). Similar findings have been found in Whitwell's (1977) work, and it is worth noting that more areas of personal development that music education assists were explored and confirmed in his research, such as self-image, self-awareness, self-perception and self-achievement.

4) Therapeutic function:

'Music Therapy' was developed in the middle of the twentieth century, by the inter-relationship of psychology, medical science and musicology (Peng, 2009). From

records of early human's activity and surviving pre-literate tribes, it can be found that music, which occupies a very important place in these pre-literate people's lives, has been used as a kind of natural medicine since ancient times (Si, 2008; Zhang, 2000). Over two thousand years ago, historical literature in China, such as 'The Record of Music' and 'The Medical Classic of the Yellow Emperor', already made some incisive arguments about the therapeutic function of music, and some cases of treating people with music were recorded in 'Spring and Autumn Annals' (Peng, 2009; Si, 2008). In the late 6th century BC, Pythagoras employed the flute and the lyre for healing purposes, and presented the concept of 'musical medicine' to describe this method of healing (Peng, 2009; Taylor, 1986). As Hallam (2010) and Si (2008) point out, since most early evidence of the effects of music therapy seems to be anecdotal, from the 20th century, an increasing number of attempts to systemise this have been carried out. In short, the special tie between music and health, including physical and psychosocial health, which are necessary elements for effective learning and whole development in all young people (Stoep et al., 2003), have become generally accepted and will be discussed below.

Firstly, reviews of studies and clinical evidence have shown that there is a range of physical benefits of participating in music activities. Take singing for instance, a number of works (Beck et al., 2000; Clift & Hancox, 2001; Clift et al., 2008 cited in Hallam, 2010; Kreutz et al, 2004; Kuhn, 2002) report that through the physical exertion of singing activities, systems of the body are exercised, particularly the lung function, breathing and heart; the skeletal-muscular system are disciplined through the adoption of good posture; and singing also benefits the immune system, which produces an increase in antibodies. In addition to singing, playing the piano has been demonstrated to 'exercise the heart as much as a brisk walk' (Parr, 1985 cited in Hallam, 2010 p. 21), and the people who engage with music events and music making activity are more likely to have lower mortality rates (Johansson, Konlaan & Bygren, 2001; Hyypa & Maki, 2001 cited in Hallam, 2010). Moreover, it is worthy to note that some effective music therapy has been found and used in clinical practices in recent decades (Peng, 2009; Si, 2008). For example, several medical scientists used piano sonatas and violin concertos in the treatment of high blood pressure, gastrointestinal disturbance and rheumatoid arthritis (Si,

2008); some of them discovered the positive effects of music upon children with eating disorders, trauma of abuse, cancer and other life-threatening illnesses (Robarts & Sloboda, 1994; Ibberson, 1996; Peng, 2009; Strange, 2002 cited in Bunt, 2003); and a 'Dietary Therapy of Music' which was termed and explored by Dr. Tomas in Italy appears to help rectify obesity (Si, 2008).

Another equally conspicuous impact of music therapy is on people who have mental and emotional problems. It is the view of Swanson (1969 cited in Crowe, 2006) that engaging in music enables people to 'find ways to express their joy or sadness, their feelings of aggression or loneliness' (p.12). And Pythagoras was firmly convinced that certain melodies can be devised as remedies against despondency, lamentation, anger and also 'against every aberration of the soul' (Chen, 2006; Peng, 2009; Taylor, 1986 p.82). Unexpectedly, these psychological benefits of music seem to be the primary reason for adolescents' preference of music, which has been discussed at the beginning of this section. In the work of Gantz, Gartenberg, Pearson, and Shiller (1978 cited in North, Hargreaves & O'Neill, 2000), a list of answers for why young people might be interested in music was presented to and appraised by participants. They found that the role of music in alleviating boredom, relieving tension and distracting themselves from worries are the most important reasons for participants. As Zillman and Gan (1997) make clear, music is considered as a kind of emotional support as well as acting as a mood regulator for young people who are feeling troubled or lonely. In addition to these, music therapy is also employed in a number of treatment agencies and hospitals around the world for patients who suffer from psychosis (such as tristimania and schizophrenia), psychological diseases (such as psychological barrier and autistic spectrum) and neurological disorders (such as headache and neurasthenia), and certain remarkable results in these areas have already been reported (Chen, 2006; Edgerton, 1994; Peng, 2009; Strange, 2002 cited in Bunt, 2003; Zeng, 2003).

2.4.3 Music and ‘education for sustainable development’

Since ancient times, music, which has always been considered as an essential part of the natural world, has provided an inherent connection between humans, the natural world and society (Ramsey, 2002; Turner & Freedman, 2004; Zhang, 2005). Firstly, music is derived from nature and life, in other words, nature is the source of music creation (Anon, 2002; Zeng, 2003). Democritus, the Greek philosopher, pointed out that humans learned to sing from the chirrup of swans and whitethroats (Xue, 2006). In fact, nature not only provides people with a variety of necessary substances for survival and enjoyment of natural beauty, but also serves as a fount of inspiration for musicians to compose music that stirs one’s very soul. Although some composers may disagree, Xue (2006) indicated that it is impossible to create the beauty of music without the beauty of nature. Next, music, as one of the important cultural elements in the reflection of nature and the whole society, contains rich information on issues associated with environmental and social change, past and present, which affects human lives (Ramsey, 2002; Zhang, 2006). What should be remembered here is that both nature and society are essential in ‘sustainable development’, which has been discussed earlier. Geisinger (1999 p.68) clearly elaborated the especially close tie that SD has with nature, and noted that ‘Sustainable Development is built on the ideology of nature’, in turn, ‘the success of the spread of an ideology of nature is manifest nowhere more clearly than in the rise of the concept of sustainable development’. That is why references reveal that music is ‘part of the comprehensive, long-term milieu of influences on the development of a sensitivity’ to issues on SD (Hoem, n.d.; Turner & Freedman, 2004 p.50).

Due to the close connection between nature, society and music, it is unsurprising that the vital role that music plays in ESD and the development of the world has been discussed by a number of musicians, environmentalists and educators in recent years. The role of music education has been long recognized from ancient Greece, and music, as an important subject in schools, was also considered as a kind of precise mathematics to explore nature in ancient and medieval Western society, rather than only as an art form of expression (Anon, 2002; Zhang, 2006). People and organizations in different periods

and countries emphasized the incomparable advantage that music education has over other subjects in promoting ESD and achieving SD. For example, while 'learning for change' is regarded as a key target of ESD today (The Scottish Government, 2010; UNESCO, 2008; Vare & Scott, 2007), Democritus has discovered in the ancient Greece that music is a powerful tool that can be used to facilitate individual changes (Xue, 2006), and it is a well-known opinion of Confucius that 'for changing people's manners and altering their customs, there is nothing better than music'¹¹ (Yuan, 2008). As Jimi Hendix, an American musician and singer-songwriter, argues, 'if there is something to be changed in this world then it can only happen through music' (Fuuse-Mousiqi, 2012 n.p.). Contemporarily, a number of people are attempting to achieve the target of SD by using music. An innovative program by Massukos Santos, who incorporates messages into music and performing in different areas to successfully 'promote the importance of water and sanitation in Mozambique, is a typical example and now serving as a model for other sustainable development programs around the world' (GEP, 2008 n.p.). At the same time, educators and environmentalists in China (e.g. Peng, 2008; Qiu, 2009; Si, 2008; Wei, 2010; Xue, 2006; Zhang, 2006) hold the viewpoint that music education assumes the inescapable responsibility in the process of the implementation of ESD, and have proposed to integrate SD into music education, which seems to be regarded as one of the effective educational means for the achievement of sustainability (Zhang, 2006). UNESCO also expressed a related view that music, with its unique functions and charm, can be a potentially important and effective educational tool for the implementation of ESD (Ramsey, 2002; Zhang, 2005).

While the significant place of music in the implementation of ESD has been introduced above, it is important to know what this kind of arts education can contribute to a sustainable future. In the next paragraphs, the various functions of music education for promoting SD will be explored and argued respectively.

¹¹ Original text: 移风易俗莫善于乐.

Music in ESD not only can provide a rich data source associated with SD, but also can be a powerful educational tool for learners' acquisition of knowledge and the development of complex understandings of ESD. Ramsey (2002) and Gurevitz (2000) have drawn attention to the fact that music portrays issues of environmental or social changes and 'represents analytical documents through information provided in lyrics'. If a picture is worth a thousand words, which is believed by some people, 'a song is worth a thousand pictures or images' (Ramsey, 2002 p.84). Music, which uses melody, rhythm, harmony, timbre, volume to create images, tends to express human's thoughts and feeling as well as to reflect social life (Mu, 2008; Zou, 2006). As a result, the talents and skills of music can be utilized to have a specific focus on SD and to convey sustainability messages into the community (UNESCO, 2012b). For example, it is suggested by Crowe (2006) and UNESCO (2012b) that learners can write songs to show what they know and understand about different topics of SD, and then perform them for others to remind them about sustainable daily practices, such as energy and water conservation.

Moreover, as has been discussed in the preceding parts of this Chapter, music may provide young people with alternative pathways to assist their learning in other areas (ASME, 1999 cited in Crowe, 2006), including ESD areas. For children, imaginative thinking plays a dominant role in their learning, and they need a variety of senses, such as hearing, to facilitate their learning (Li, 2006). For adolescents or adult learners, although there is a rapid development of abstract logical thinking, 'this thinking pattern to a large extent needs the support of sense experiences simultaneously to enable teenagers more comprehensively and profoundly to understand and master the knowledge' (Wang & Wang, 2004 p.242). The work of Gurevitz (2000) identified the existence of sensory experiences in music education and noted that the knowledge of SD can be derived from such a kind of study. Ramsey (2002), Maute (n.d.) and Janke (n.d.) mentioned the role of music in helping people remember the learning content, introducing a topic and fostering a discussion or debate. While learning the knowledge of SD can be considered as dull and a study burden (Chen, 2005), the emotional and motivational power of music plays a significant role in stimulating learners' enthusiasm for the study of sustainable issues, generating their interest in different topics and helping them get

involved in the learning (Maute, n.d.; Orleans, n.d.; Peng, 2008; Ramsey, 2002; Turner & Freedman, 2004; Wei, 2010), which contributes a lot towards the effective studying of SD (Cai, 2007; Li, 2006; Liu, 2007; Zeng, 2003). Music, therefore, is one of a number of the most powerful, innovative and intriguing ways to approach ESD in terms of teaching knowledge rooted in the affective domain (Janke, n.d.).

However, according to the previous discussion in Section 2.3.3, an increasing number of studies (e.g. Cai, 2007; Huang, 2004; Jiang, 2002; the Scottish Government, n.d.) argue that focusing exclusively on scientific or cognitive knowledge of SD cannot lead to obvious changes of behaviour. In parallel, the importance of values, public awareness and positive attitudes is stressed (Ansell, 2006; Starner, n.d.; Hoem, n.d.; Huang, 2004; Pan, 2005; Wang & Wang, 2004). All of these authors expressed a similar view that creating people's awareness and attitudes to SD, which are prerequisites for making reasonable decisions and taking actions for sustainability, is a vital target of ESD. Some of them (Huang, 2004; Pan, 2005; Zheng, 2006) also argued the key and irreplaceable role of affective experience in the process of developing sustainable values, awareness and attitudes. As Dollase pointed out, an emotional basis of learning, which is considered as a driving force of a person's behaviours (Chen, 2006; Hu, 2005; Luo, 1999; Si, 2008; Tang, 2005), should be given the first place in environmental education, rather than cognition (Zeng, 2006; Zhu & Pan, 2003).

Music activities, which 'are better suited to the fostering of affective knowledge and providing sensory and aesthetic experiences than some disciplines more traditionally associated with environmental education, such as science and geography' (Chen, 2006; Gurevitz, 2000 p.262; Zhang, 2007), appear to have the great potential to impact on human being's awareness, attitudes and values. The main means of developing awareness and positive attitudes towards SD in music lessons is 'emotionalizing' rather than 'talk sense', and educating 'imperceptibly' rather than 'directly' (Wei, 2010; Xue, 2006). Music, which contains different themes, meanings and emotions and offers an inherent connection between human and SD, can imperceptibly influence people's minds and feelings through lyrics, rhythm and melody. By providing an aesthetic and affective

understanding of the issues of SD, a feeling response and empathy can be successfully promoted and developed (Hoem, n.d.; Orleans, n.d.; Turner & Freedman, 2004). As Li (1998) and Si (2008) argued, music contains a huge, invisible and non-substitutable force to facilitate the enhancement of public awareness of sustainability to a large extent.

The above point of view has already been supported by a number of works. For example, Starner (n.d. p.6), a banjo player and folk singer, firmly believed that a folk song can save the world, and vividly described it as the mystical energy that 'can unlock our shared ancient yearning for peace' and 'tapped as we view an unspoiled vista'. Both Turner and Freedman (2004) and Starner (n.d.) expressed their opinions in terms of the values that the different perspectives can be defined by a song, and music has tremendous possibilities for enhancing perceptions of the value of sustainability. In addition to these, several works (e.g. Anon, 2008; Center for Environmental Education, 1999; Luo, 1999; Ministry of Education of the People's Republic of China, 2005; Zhang, 2006) reported that due to the various ideas and emotions that could be delivered by the melody, rhythm, lyrics and ambience of a piece of music, the involvement in music, such as listening, performing and creating, is the key to providing participants' affective experiences, thus creating their awareness and developing their attitudes of care and concern for a sustainable earth. To sum up, for the purpose of fostering responsible behaviour, music education seems able to contribute greatly to the development of public awareness and human's positive attitudes towards SD by facilitating aesthetic experiences and emotional sublimation, rather than merely by passive absorption, for example, by preaching and 'as a means of conveying detailed knowledge' (Burgess & Gold, 1985 cited in Turner & Freedman, 2004; Chen, 2006; Gurevitz, 2000; Hines, Hungerford & Tomera 1986; Hwang, Kim & Jeng, 2000).

Through a variety of experiences in music, participants can also be supported 'in developing problem-solving techniques and in becoming independent thinkers and learners' (Crowe, 2006 p. 68; Hoem, n.d.). Traditional teaching methods usually put learners in a state of passive learning. Taught by such a pedagogy, students are only recipients of knowledge, and their creativity, ability to think independently and innovation

and practical skills cannot be developed (Ai, 2009; Zheng, 2006). However, Agenda 21 (SOS Children, 2005) and UNESCO (2005a) strongly emphasize the significance of skills, such as creativity, critical thinking and action, and stated that ESD 'encourages young people to take action on what they have learned rather than simply absorbing information for regurgitation in exams' (SOS Children, 2005). It is therefore seen to be imperative to change the modes of instruction for the implementation of ESD (Ai, 2009; Zheng, 2006). Articles indicate that music has great potential for helping in the development of those above essential abilities. Plato considered that music can urge action (Peng, 2009), and the opinion of Lanqing Li, China's former deputy premier, is that music education, as a key component of aesthetic education, is helpful for the enhancement of problem-solving skills (Chen, 2006). Moreover, a number of experimental reports (e.g. Hamann et al., 1991; Kalmar, 1982 cited in Hallam, 2010; Koutsoupidou & Hargreaves, 2009) demonstrated the important impact of music in developing creative skills and critical thinking. According to Chen (2006) and Si (2008), the imaginative thinking and divergent thinking modes, which are more likely to be formed in music activities, are important means to advance the development of a person's creativity and critical thinking.

2.5 Summary

To conclude, there is extensive written work that identified the values of promoting SD and ESD for human beings and the future world, and the values of music, as an arts form, to encouraging positive changes towards a more sustainable society for all. Firstly, in order to fully understand the issues involved in the research, the contextual and conceptual information about SD and ESD was examined. Meanwhile, the chapter also reviewed and discussed four major roles of education with a particular focus to the transformative role, which seems to be the most congruent with the vision of SD, and problematised how education could achieve the ultimate aim of ESD, by the identification of its effects in learners' development of their SD-related knowledge and understanding, skills, awareness, positive attitudes and behaviours and of the relationships among these traits. The review of the literature suggested that neither knowledge nor skills or attitudes and awareness of SD issues alone, are adequate to bring about human beings'

responsible behaviours that contribute to a more sustainable future, and that change in these behaviours requires the combined effects of all of the traits mentioned above.

Moreover, according to Duke (2000), careful consideration of the effects, especially the benefits, of music is prerequisite to teaching music. The consideration was started with an examination of the role of arts, which is viewed as a fundamental part of human culture and society (Duke, *ibid*), as well as its links to ESD. Next, music, which 'consists of an extraordinary opportunity to advance for social change' (Ferraz, 2011 p.53), received particular attention. It was reported that music, which contains different themes, meanings and emotions, can promote emotional, aesthetic and cognitive development through active participation in arts activities, and thus has great potential for being an educational tool for learners' acquisition of SD-related knowledge and skills, development of complex understandings of SD issues and creation of awareness and attitudes to SD. Despite a number of relevant written works in the area, there is a gap between these assumptions and actual practices. As a result, this project seeks to generate and provide empirical evidence to fill the research gap.

Chapter 3 Methodology

3.1 Introduction

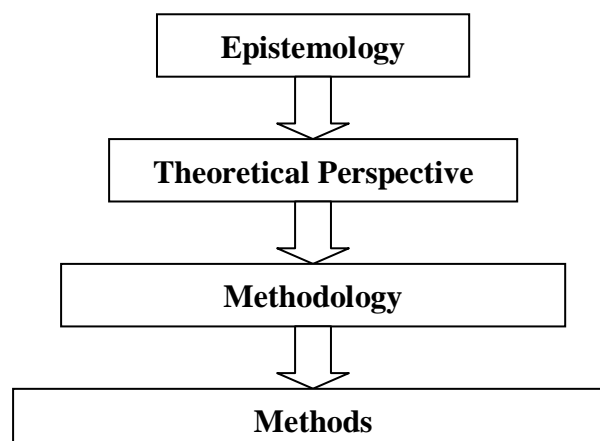
Social research 'is much more like an art than a science' (Ball, 2010 p.xvii). This is because the design of research requires imagination, creativity and invention to facilitate making judgments and decisions on the best ways of undertaking the research (Ball, 2010; Somekh & Lewin, 2011). 'Preparedness' is fundamental to the achievement of a high quality research project (Somekh & Lewin, 2011). In the process of developing a research proposal, it is suggested by Crotty (2004) to put considerable effort into answering two questions: 1) what methodology and methods would be employed? 2) How do we justify the choice and use of methodology and methods?.

In this chapter, the answers to the two questions above are presented through the analysis of four basic elements, as shown in Figures 3.1 and 3.2. This chapter begins with a brief discussion on the philosophical underpinnings of this research. Rodriguez-Remedi (2007) pointed out that the understanding of the philosophical stance and theoretical ideas by the researcher is vital for the selection of an appropriate methodology and methods. As a result, Section 3.2, which explains the meanings and implications of constructionism and symbolical interactionism, as well as their links with each other and with the research questions, presents the justification for the methodology and methods employed. Next, Section 3.3 details the selection of and describes the research methodology and also examines general methodological issues in relation to this study. Finally, the research procedure within fieldwork, the method of sampling, the different tools for data gathering, including documentary method, teaching intervention practices, questionnaires, observations and interviews, and the method of data analysis are discussed in section 3.4. The researcher's position and the ethical issues are explained in the last section.

3.2 Philosophical and theoretical underpinnings of this research

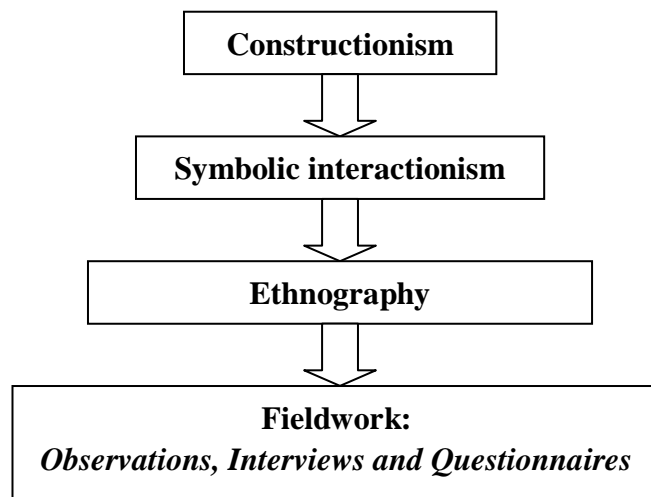
Theory and broad philosophical orientation operate as guides to research practice (Fetterman, 2010; Law, 2003). Fetterman (2010 p.5) emphasizes that research cannot be carried out 'without an underlying theory or model'. The philosophical and theoretical approach is considered as a way of seeing the world and making sense of it (Crotty, 2004; Somekh & Lewin, 2011). It involves knowledge and helps researchers understand how things work and how to tackle them (Fetterman, 2010). Somekh and Lewin (2011) conclude that the way of looking at the world affects the selection of research methodologies and methods. Methodology and method cannot make sense without some philosophical or theoretical ideas on 'which the researcher is working' (Ball, 2010 p.xvii). Undertaking high quality research requires working with a methodology and methods with the most appropriate philosophy and theory in mind. There is much discussion on philosophical paradigms or theories of social research, but the terminology appears to be inconsistent in research literature. For instance, the same terminology can be used in different ways. In order to provide direction and a feeling of stability for researchers when they set out to do research design, Crotty (2004 p.1) puts forward a 'reasonably clear-cut way of using terms and grasping what is involved in the process of social research'. He identified four basic elements of any research process, which are depicted in Figure 3.1.

Figure 3.1: Crotty's (2004 p.4) four basic elements of any research process



It is worth noting that these four basic elements can be used to serve the purpose of ensuring ‘the soundness of our research and make its outcome convincing’ (Crotty, 2004 p.6), and each of them inform the next. For this research, the four different process elements being used are outlined in Figure 3.2, and the choice and use of each term are discussed and justified respectively in the following sections.

Figure 3.2: Four process elements used in this study



3.2.1 Epistemology – Constructionism

Epistemology, referred to as ‘the theory of knowledge’, is inherent to the theoretical perspective and the methodology (Crotty, 2004 p.3), and deals with the nature, ‘possibility, scope and general basis’ of human knowledge (Hamlyn, 1995 p.242). Maynard (1994 p.10) carefully spells out the meaning of this term: ‘Epistemology is concerned with providing a philosophical grounding for deciding what kinds of knowledge are possible and how we can ensure that they are both adequate and legitimate’. The epistemological stance adopted here is ‘Constructionism’, more specifically, ‘Social Constructionism’. Constructionist epistemology holds that meaning is constructed rather than discovered. In the constructionist view, the world and objects in the world are always already there without any actual meaning at all. Meanings or truth are constructed by human beings when they engage within the world, make sense of and interpret it.

As discussed in the Literature Review, an increasing number of scholars in the field of SD are now concerned with the role of unconventional SD learning experiences. If personal or social transformation towards SD is to be nurtured through the experience of music learning, as this research seeks to do, constructionism is likely to be an appropriate epistemological stance for guiding the plan and implementation of this kind of research practice.

Constructionism is developed as 'a theory of learning and a strategy for education' and is based on two senses of 'construction' (Massachusetts Institute of Technology, 2012; Resnick, 1996 n.p.). It is the first view that learning should be an active process: learners actively construct new knowledge, rather than merely get ideas and information which are 'poured into their head' (Massachusetts Institute of Technology, 2012 n.p.). Compared to the first type, the second focuses more on 'the art of learning' (p.1), more specifically, on the significance of 'learning through making rather than overall cognitive potentials' (Ackermann, 2001 p.4). It asserts that people construct new knowledge, form and transform their perspectives 'with particular effectiveness when they are engaged in constructing personally meaningful products' (n.p.), including the products of arts (Resnick, 1996 n.p.). The importance of tools and media, which can best support the building of people's knowledge and the 'explorations of what they most care about' (Ackermann, 2001 p.4), were stressed in the process of self-directed learning. From a constructionist point of view, learners, regardless of age and gender, are 'worldmakers' who make meanings of their own world, and their inner feelings and ideas are crucial to learning (Ackermann, 2001). In this research, music is assumed to be a useful tool to facilitate people's active and effective construction of their own knowledge and ideas on SD. Active learning, effective learning and learning with useful tools are the common key themes which justify the use of 'Constructionism' in this project.

The theory of 'Social Constructionism', which applies the general philosophical 'constructionism' into social settings, largely derives from Berger and Luckmann's (1967) 'The Social Construction of Reality'. The influential work explained that

'What is 'real' to a Tibetan monk may not be 'real' to an American Businessman. The 'knowledge' of the criminal differs from the 'knowledge' of the criminologist. It follows that specific agglomerations of 'reality' and 'knowledge' pertain to specific social contexts, and that these relationships will have to be included in an adequate sociological analysis of these contexts.' (p.15).

In Schweingruber's (2005) constructionist opinion, social construction of reality is a process through which the members of a society 'attach meanings to things and then act on the basis of those meanings'. Kallio, Nordberg and Ahonen (2006) connected this theory with 'sustainable development' and analyzed the ways of constructing the 'social reality' of sustainable development. The links of the philosophical approach to this research and the research questions are further discussed in Section 3.2.4 and 3.2.5 below.

3.2.2 Theoretical perspective – Symbolic interactionism

Crotty (2004 p.3) defined 'Theoretical Perspective' as the philosophical stance that lies behind a range of methodologies, including some forms of ethnography, 'and thus provide a context for the process and ground its logic and criteria'. The way people see the world determines their way of researching the world. Symbolic interactionism, as a theoretical perspective, is one of the approaches of 'understanding and explaining society and the human world' (Crotty, 2004 p.3).

Each researcher, in the light of the issues or research questions being explored, will select an appropriate type of theoretical perspective for each piece of social research. While most perspectives have been used in environmental education research before, 'positivism' seems to have been the most dominant before the 1990s, especially in America where a lot of environmental education research in the 1970s and 1980s took place (Robottom & Hart, 1993). However, although this paradigm stresses the behaviouristic approaches in environmental education, Law (2003 p.103) points out the 'failure to consider the significance of personal experience and social structure on the nature and outcomes of environmental learning'. Therefore, the appropriateness of positivist research in environmental education became a contentious issue in the early

1990s (Robottom & Hart, 1993). More recently, 'Interpretivism', which contains 'symbolic interactionism' and 'critical inquiry', are increasingly employed (Law, 2003).

The term 'symbolic interactionism' directly deals with symbols, action, communication and community. Blumer (1969) and Woods (1979), as two key theorists in the development of ideas surrounding 'symbolic interactionism', enunciate the basic postulate that human beings take actions towards 'things' on the basis of the meanings they continuously construct through 'symbols' for them. In this process, 'meaning', 'symbols', and 'thought' are three core elements (Blumer, 1969). 'Symbols', including both verbal and non-verbal tools, such as language, gestures, actions, appearance, drawings and musical sounds (Geertz, 1973; Woods, 1996), play a vital role in human's construction of meanings, thought and actions (Woods, 1983 cited in Cohen, Manion & Morrison, 2011). When people communicate through 'significant symbols' – that is language, music, drawings and other symbolic tools, they 'become aware of the perceptions, feelings and attitudes of others and interpret their meanings and intent' (Crotty, 2004 p.75). Symbolic interactionism attempts to encourage a more active human being. People's feelings, thoughts and behaviours are constantly undergoing change through interaction, and the social world is changing through interaction as well (Cohen, Manion & Morrison, 2011). According to Blumer (1969) and Woods' (1979) basic postulate above, in the current research, music is one kind of set of 'symbols', and the term 'sustainable development' can be regarded as the 'things' that human beings need to perceive, interpret and act on it. During the process of music teaching, music teachers and children can be provided with opportunities to look at issues of SD and construct their own meanings of this concept through their communications with music, language and behaviours, which directly influence their future actions in society.

Symbolic interactionism informs a range of methodologies for social research, including ethnography. While symbolic interactionism emphasizes the notion of putting oneself in the particular place and giving meanings to things through interaction (Cohen, Manion & Morrison, 2011; Crotty, 2004), ethnography aims to 'get inside' the way each person sees and understands the world (Hammersley, 1985 p.152). In line with this approach, I put

myself in some unfamiliar places (British secondary schools and classrooms), and saw how music teachers and children interacted and constructed their own meanings in music lessons. Meanwhile, I also constructed my thoughts on music teaching and ESD, drawing on the perspectives and feelings of music teachers and students. As Crotty (2004 p.76) argued, 'symbolic interactionism should take to its bosom the research methodology developed within cultural anthropology, that is, ethnography', which is discussed in detail in Section 3.3. The next section focuses on the interrelationship between 'Social Constructionism' and 'Symbolic Interactionism'.

3.2.3 Interrelation between 'social constructionism' and 'symbolic interactionism'

According to the social constructionist theory, all of us are 'born into a world of meaning' and 'inherit a system of significant symbols' (Crotty, 2004 p.54), which constitute culture as a necessary guide to human behaviour (Geertz, 1973). Many social activities are symbolic, involving construction (Woods, 1996). Moreover, Kingford Smith and Williamson (2004 cited in Williamson, 2006) and Schwandt (2000) laid particular emphasis on the importance of shared meaning, which arises from interaction and interpretation (Mead cited in Schweingruber, 2005), to the process of social construction. Schwandt (2000, p.305) argues that 'we do not construct our interpretations in isolation but against a backdrop of shared understandings, practices, language, and so forth'. The construction of meaning through interaction – 'Sharing and mutual imbuing with meaning' makes the activity truly social (Woods, 1996 p.33). It appears to be clear that 'it is difficult to embrace the ideology of 'social constructionism' without factoring in 'symbolic interactionism' as a vital component' (Taylor, Gilmer & Tobin, 2002 cited in MacKinnon, 2005 p.91). In addition to this, interactionists also emphasize the significance of a constructionist perspective to the development of interactionist theory. They see symbolic interaction as a process of construction which occurs in a social context, not only a single person's response. The notion of 'symbolic interactionism' stems from the thought of pragmatist philosopher and social psychologist Mead (1934), whose standpoint was that each person is a social construction. 'We come to be persons in and

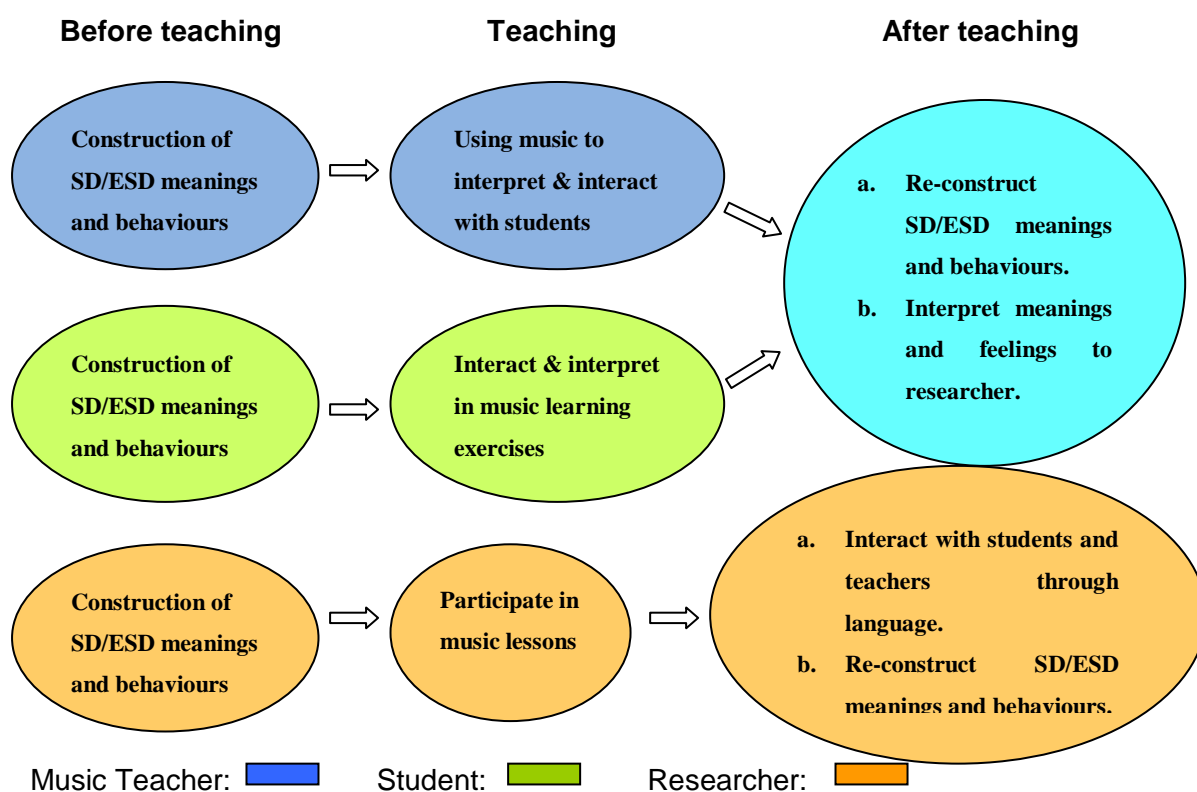
out of interaction with our society' (Crotty, 2004 p.62). For the interactionist theorists, society is comprised of 'organized and patterned interactions' among persons (McClelland, 2000), and interaction could be set up through various constructions of reality (Woods, 1996). Individuals are not just 'passive and conforming objects of socialization', but the 'active and creative participants' who self-construct their own meanings, actions and their social world through symbols (McClelland, 2000 n.p.; Woods, 1983 cited in Cohen, Manion & Morrison, 2011). Furthermore, one of three core principles of 'meaning', mentioned in the previous paragraph, contends the same standpoint with 'constructionism' that people take actions towards things based upon the meanings attached to them (Blumer, 1969; Schweingruber, 2005). As Mead (Schweingruber, 2005) makes clear, compared with other theoretical perspectives, 'symbolic interactionism' studies are more likely to research concerning people's construction of social reality.

3.2.4 Links of the philosophical and theoretical frameworks to this research

As Figure 3.3 indicates, the whole study can be seen as a process of teachers, students and researcher constructing their own meanings and actions through symbolic interpretations and interactions. Constructionist classrooms are social places (Johnson & Johnson, 1996 cited in MacKinnon, 2005) in which music teachers are provided with opportunities to look at issues of 'sustainable development' and 'education for sustainable development', then interpret and promote it. Through their interactions with students, there was a high possibility that music teachers would re-construct their own meanings of SD and its relationship with music education, which may influence directly on their future actions in classrooms as well as in society. Meanwhile, students were 'not just receivers or consumers of knowledge, but constructors of shared meanings', their own meanings and actions in musical exercises with teachers (Woods, 1996 p.39). In this process, music, as one kind of set of 'symbols', is precisely assumed to be a useful tool to facilitate people's active and effective interaction and construction of their knowledge and ideas on SD. Additionally, I also re-constructed my thoughts on ESD and music

teaching drawing upon the perspectives, feelings and actions of music teachers and students over the research period.

Figure 3.3: Summary of the way ‘Constructionism’ and ‘Symbolic Interactionism’ influenced the research process



3.2.5 Relation of the philosophical and theoretical frameworks to the research questions

Research question 2, divided into 2a and 2b, aims to investigate whether and to what extent music teachers and adolescents can construct their meanings of, attitudes towards, perspectives and actions on SD through music teaching/learning. The interactionist and constructionist approaches, which enable the meanings, perspectives and actions of participants ‘to be studied in depth’ (Williamson, 2006 p.98), are likely to be the most appropriate theoretical stance for this questions. When people communicate through important symbolic tools in the social world, such as music, they ‘become aware of the perceptions, feelings and attitudes of others and interpret their meanings and intent’ (Crotty, 2004 p.75). In this process, they will reconstruct and develop their own meaning ‘through their continuing activities’ (Blaikie, 1993 p.36). People’s feelings,

thoughts and behaviours are constantly undergoing change, and the social world is changing through interaction as well (Cohen, Manion & Morrison, 2011). Moreover, 'Social Constructionism' and 'Symbolic Interactionism', as argued above, reflect our assumptions that music, as one kind of symbol, plays a vital role in individuals' self-construction of behaviours. Therefore, identifying its actual impacts and finding out what 'meanings', which play a significant role in what people do (Charon, 2009), are 'attributed to actions by participants' (Woods, 1996 p.42), become indispensable. Since the participants' meanings and actions are constructed by themselves when they engage in the symbolic interaction, it is advisable (ibid, p.39) to see the process of social interaction in the music lessons from their viewpoints and feelings, to 'appreciate how they interpret the indications given to them by others, the meanings they assign to them, and how they construct their own action'. Question 1a, which examines how music teachers and students interact and construct SD or ESD meanings and behaviours in music lessons and investigates their responses to the lessons, appears to follow Woods' suggestion. Furthermore, as this research is concerned with learning, such as SD learning, participants' innermost feelings and ideas, 'their impulse and passions, their hunches and risk taking, the things they would like to do but cannot, what prompts them to act in certain ways, and what gives them pleasure and what cause pain' are necessary to be explored (ibid, p.47). From a constructionist and interactionist point of view, teachers' and learners' affective rather than cognitive domains are crucial to learning and understanding themselves (Ackermann, 2001; Elbaz, 1992; Woods, 1996). Lastly, according to constructionist and interactionist theories, different people may make sense of the same object and interpret similar symbols in quite different ways (Fish, 1990; MacKinnon, 2005), which supports one of objectives of this research (Question 1b) – investigating music teachers' comprehension of SD and the ways they used to interpret this in music classes. In addition, research question 1b also meets one of the main requirements of symbolic interactionist research, understanding which symbolic meanings are intended to convey to others and how meanings emerge through interaction.

3.3 Methodology – Ethnography

Ethnography, as a methodology, is one of many research designs that ‘shapes our choice and use of particular methods and links them to the desired outcomes’ (Crotty, 2004 p.7). It has its origins in anthropology (Smith, 1988; Somekh & Lewin, 2011), hence is viewed as ‘a way of studying human life’ (LeCompte & Preissle, 1993 cited in Tsui, 2011 p.2). Swanwick (1983 p.16) divides the word ‘ethnography’ into two parts to explain its meaning: ‘ethnos = people or race; graphy = description’. The descriptions of the meaning of ‘ethnography’ are diverse (Walford, 2005), and there is still a lack of common definition (Green & Bloome, 2004). Researchers use the term in a variety of ways and define what counts as ethnography accordingly in different ways. For example, Diaz de Rada (2010 p.44 cited in Dietz & Veinguer, 2015 p.657) defines ethnography as ‘a description and interpretation of situated practices’, and Fetterman (2010 p.1) describes an ‘ethnographer’ as a storyteller who prefers to use ‘verbatim quotations’ from the voices of local people and ‘a ‘thick’ description of events’ to tell ‘a credible and rigorous story’. The viewpoint of Hodges (2013 p.307) is that ‘ethnography is concerned with making sense of human action by exploring the sociocultural context within which those actions take place’, and it ‘seeks to explore what people do and why they do it, as well as their expectations and aspirations for the future’. Flyvbjerg, (2001 p.4 cited in Ramaekers, 2006 p.247) points out the role of ethnography in helping to ‘restore social science to its classical position as a practical, intellectual activity aimed at clarifying the problems, risks, and possibilities we face as humans and societies, and at contributing to social and political practice’. As indicated in these explanations and concluded by Green and Bloome (2004), ethnography is viewed as an area of study, or a way, a process and a product of constructing knowledge of the world, which always depend on the context of use.

Decisions on the methodology are influenced by the researcher’s chosen epistemic and theoretical positions, as well as the research objectives and questions (Carter and Little, 2007). In this study, there are three reasons for the choice of this methodology. Firstly, ethnographic research, in the spirit of symbolic interactionism, seeks to uncover and

document a culture – the practices or activities and perspectives – of the people participating in the research (Crotty, 2004; Hammersley, 1985; Hitchcock and Hughes, 1989 cited in Cohen, Manion & Morrison, 2011). The task of ethnography links deeply to the main objective of this project, which strives to undertake and thickly describe the educational practices in a particular cultural context – London’s secondary schools, from the behaviours and point of view of the participants. Next, while learning SD through music in secondary classrooms is considered as an innovative way of thinking and implementing an ESD curriculum programme, ethnography also ‘allows for changing and new ways of understanding to be incorporated in its practices’ (Somekh & Lewin, 2011 p.36). Lastly, Altheide and Johnson (2011 p.487) view ‘understanding’ as the ‘classic ethic of ethnography’, and assume that understanding will ultimately be useful in some sense. Since this study is focused on the pedagogy of ESD and music education, hopefully, new knowledge and experiences gained will be helpful to practitioners and researchers in the related fields.

The present research, which was undertaken based on the knowledge derived from education and ethnography, was intended to look at and undertake ethnography in a particular way. In the late 20th century, there was an anthropological concern in the field of research about ethnographic accounts of educational settings (Yon, 2003). ‘Educational ethnography’, which presents an interdisciplinary fusion, was developed by Goetz and LeCompte in 1981. It involves anthropological studies of education and enculturation in distant and local societies, the influence of psychological and evaluation studies as well as sociology (Smith, 1988). Compared to other ethnographic research, educational ethnographical research focuses on the ‘sites of ethnography’, not only as ‘physical sites of people studied’, but also as ‘intellectual sites’ with ‘a set of theories, methods, questions, goals and practices’ that ‘needed to engage in the form of ethnography’ (Green & Bloome, 2004 p.181). As proponents of ethnographic research in education make clear, ‘it gets away from the simplistic reduction of prespecified observation schedules and is particularly suited to bridging the gulf between research and practice’ (Woods, 1986 cited in Smith, 1988 p.27; and also see Delamont and Hamilton, 1993). Today, ethnography is used by a lot of educational researchers as a

useful means to gain a rich insight on what actually happens in a classroom or a school (Freebody, 2003; Hammersley, 1990).

Educational ethnography emphasises the description and interpretation of detailed classroom interactional processes, rather than the interpretation of the society and its relationships (Hymes, 1962, 1974 cited in Tsui, 2011; Woods, 1979). It was defined as the 'holistic depiction of uncontrived group interaction over a period of time, faithfully representing participant views and meanings' (Goetz & LeCompte, 1984, p.51 cited in Eisenhart, 1988 p.99) and 'the disciplined study of what the world is like for people who have learned to see, hear, speak, think, and act in ways that are different' (Spradley, 1980, p.3). The two clarifications of the meaning of educational ethnographic research suggest that educational ethnographers apparently have the ability to find detailed information about students' cognitive and emotional development with regard to SD issues and about both music teachers and students' attitudes towards the teaching intervention, as well as to identify the psychological or instructional factors and processes that affect the students' final learning outcomes, which are the main goals of the present research.

3.4 Research methods

Research methods 'are the most flexible, pragmatic, and intrinsically atheoretical component of the research process' (Carter & Little, 2007 p.1326). Without careful selection of the methods, the answers to the research questions and the research aims would be difficult to be obtained and achieved. When considering research ethics, sampling and approaches of collecting, handling and analysing data were considered. During the planning and research period, these methods and techniques were rethought, re-evaluated and revised several times. As Smith (1988 p.36) pointed out, 'appropriate selection and combination was needed in order to check accounts and perspectives, to trace changes over time, to relate aspects of thinking and action, and to produce a holistic account that was authentic'.

The choice of methodology has a profound effect in terms of the study design and the implementation of methods (Carter & Little, 2007). Ethnographic methods and techniques, are not only 'used to gather and analyse data related to some research questions' (p.3), but also 'help guide the ethnographer through the wilderness of personal observation and identify and classify accurately the bewildering variety of events and actions that form a social situation' (Crotty, 2004 p.33). The emphasis in the ethnographical tradition is very much on coming to know the 'insider' perspective by immersion in the field and participant observing, as well as some formal and informal interviewing, which is used to help interpret the observations (Somekh & Lewin, 2011).

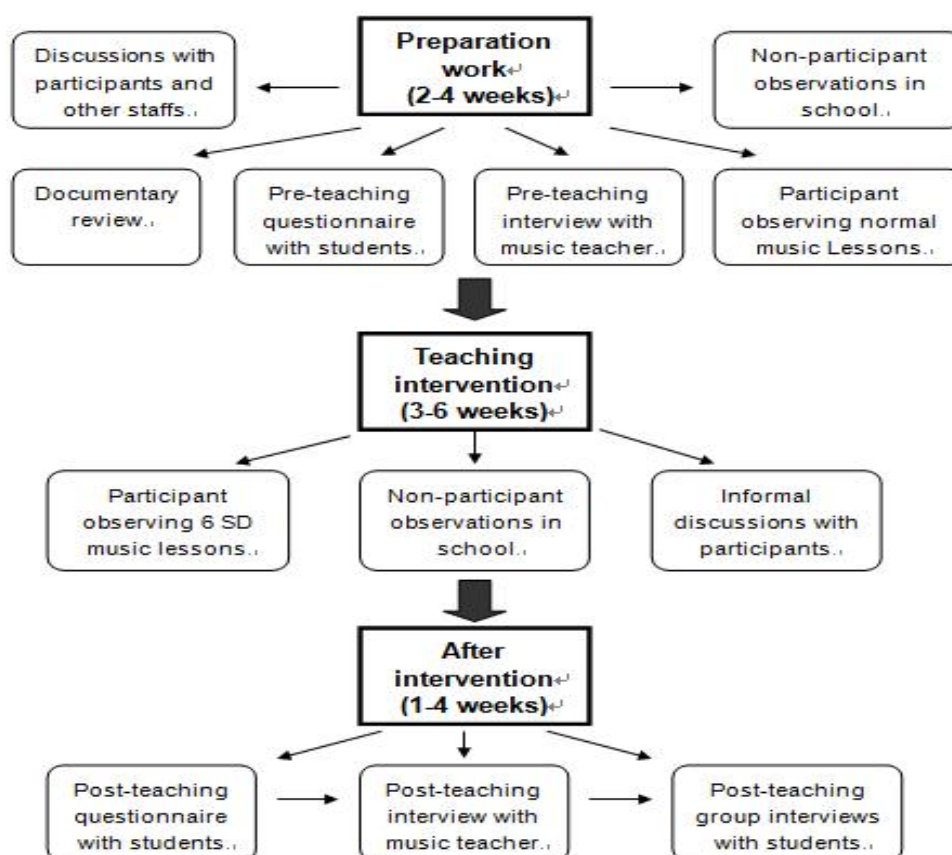
3.4.1 Research procedures and data gathering within fieldwork

Fieldwork, which is generally regarded as the hallmark of ethnographic research, shapes the research design for all ethnographers. Ethnographers usually work with people for 6 months to two years or more in their native environment (Fetterman, 2010). In this project, the constraints from schools and the deadline of thesis submission limited the allowable time for data collecting in the field. The length of time for data gathering was ten months in London with multiple-site research (see Table 3.3 in Section 3.4.2), and the length of time in each school, which was mostly determined by music teachers' schedules and their designed teaching planning, was three to five months. Meanwhile, an ethnographic intervention approach, which consisted of a six-lesson teaching intervention, participant classroom observation, pre- and post-teaching individual interviews with music teacher, post-teaching group interviews with students and pre- and post-teaching questionnaires with students, was employed in the four sample schools.

Figure 3.4 below illustrates the three research stages and the detailed research process in the field. Having received ethical clearance, the main tasks in the first two to four weeks were agreeing the research schedule and the ways of carrying out the intervention with the music teachers, and acquiring a further understanding of the whole school including the school environment, teachers, students and their school lives. I tried to spent as much time as possible in each school to observe the normal music lessons, the

whole school and the catchment areas. I grasped every opportunity to talk with students, music teachers and other staff. Meanwhile, the pre-teaching interviews with music teachers, pre-teaching questionnaires with students, and discussions with Geography teachers and teachers who were in charge of SD activities were undertaken. I also participant observed the music teachers and the participating students in their normal music lessons, and had conversations with students to get to know them and the music teachers. This enabled me to gain a better understanding of the music lessons and the music teachers' pedagogy. The music teachers planned the unit of SD throughout these weeks, then taught six music lessons as the teaching intervention in the following weeks. I observed the six music lessons in each school, and due to the limitations on the course schedule and the research time, I observed one geography lesson in only two schools. After the intervention, one to four weeks was used to conduct the post-teaching questionnaires and group interviews with students and the post-teaching interviews with music teachers. Moreover, the preparation for data analysis, such as transcription, was carried out in parallel to the data collection.

Figure 3.4: Three main research stages with different techniques of data collection



Each fieldwork employs various methods and techniques to 'ensure the integrity of the data' (Fetterman, 2010 p.34). This study is no exception. The main research stages and the techniques used in each are summarised in Figure 3.4. From Section 3.4.5, each method and technique for data gathering is discussed respectively.

3.4.2 Changes from the initial planning to the actual research procedure

As mentioned above, the designed methods and techniques were reevaluated and revised several times during the process of planning as well as researching. The implementation of the initial data collection methods was influenced by some constraints and unpredictable events, which caused the following main changes in the field in terms of research methods and the time arrangement.

3.4.2.1 Changes in research methods

For a successful research project, it is necessary to rigorously review the possibilities and 'practice in context' to find the most appropriate techniques, rather than adopt techniques for generating infeasible and unproductive data (Smith, 1988 p.29). At first, the conduct of this research was to be entirely by qualitative methods, such as interviews and observations. For students, apart from the post-teaching interview, a pre-teaching interview was designed to find out their pre-teaching conceptions, attitudes and behaviours towards SD, their experiences and opinions about learning SD, and their experiences within music lessons. However, when I discussed and made a detailed research schedule with music teachers in the first two sample schools, both teachers and I found that there was limited time to interview students, and the two teachers suggested using questionnaires, which they felt was more common and feasible method for collecting data on students' feelings and perspectives in their schools. Both questionnaire and interview have certain advantages and disadvantages. While spending a small amount of time to gather information is one of main advantages of questionnaires, interviewing enables the collection of more explicit, in-depth and dependable insights into students' thoughts, attitudes and actions (Akbarak, 2000; Harris & Brown, 2010), which

is crucial for answering the research questions, especially 1b and 2b (see Section 1.1.3). Therefore, in order to guarantee the participation of these schools and the successful completion of data analysis work, a qualitative strategy – the post-teaching group interviews and a quantitative one – the pre/post-teaching questionnaires were brought together in this study. The implementation of this research work was still based on a qualitative approach, and the data obtained from students' questionnaires was used to support the other qualitative results and as a triangulation to assess the data collected from the qualitative techniques.

Secondly, music teachers' heavy work loads led to the difficulty in them reflecting on music lessons in a timely way. A self-evaluation form for music teachers was designed for the collection of comprehensive information on their views of how the lessons had gone. However, in view of music teachers' hectic work schedules, there was a high possibility that they forgot to reflect and evaluate the teaching content, teaching strategies and students' responses within each SD lesson, and make notes on them as well as on the challenges they met during teaching. While all of the music teachers were asked and agreed to spend five to ten minutes after each lesson on a self-evaluation form, most of them didn't complete that. After my constant reminders them by either emails or face-to-face conversations, the music teacher in the first sample school completed forms for the first three lessons, none of forms were filled in by the teacher in the second school, the teacher in the third school completed all forms except the form for the last assessment lesson. The fourth teacher only completed the form for the first lesson. Music teachers recollected what happened with the form and explained that the self-evaluation form was the best and most feasible way for them to note their thoughts in a timely way, and the only reason for their failure to do so was their busy workload. Due to the insufficient data from music teachers' self-evaluation forms, these data will be selected cautiously during discussion of the findings and will only be used to support and cross-check the other qualitative findings.

3.4.2.2 Changes in the time arrangements

One school's sudden withdrawal during researching directly influenced the whole planning in terms of the future work schedule and the time arrangements. The initial planned length of time for the fieldwork and the actual periods of fieldwork have been summarised in Tables 3.1 and 3.2. It can be discovered from the two timelines that at first, the fieldwork was designed to be undertaken over a period of approximately seven months – two school terms in three schools, but since the first school's midway drop-out, I spent another four months looking for sample schools and identifying participants. Finally, the study was carried out in further four schools, and the period of data gathering was about ten months – three terms, which caused the future work, such as data analysis and writing up, to be delayed.

Table 3.1: Timeline summarising the initial planning for the fieldwork

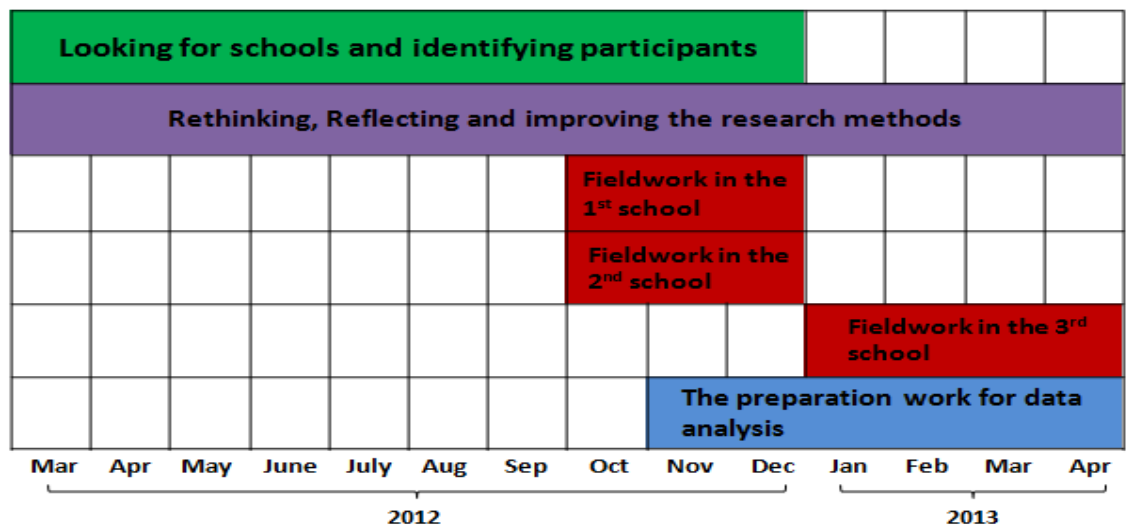
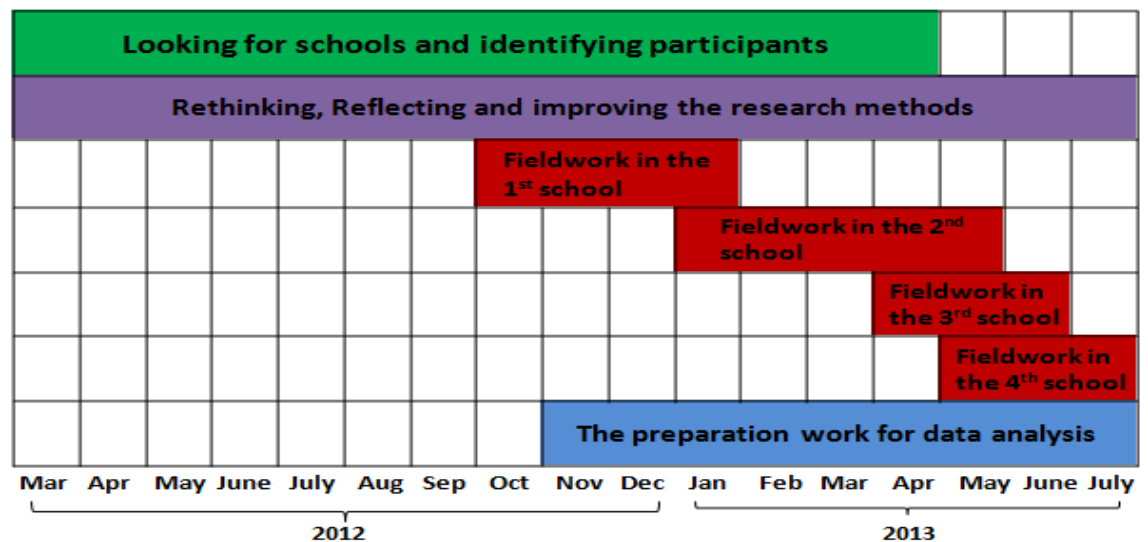


Table 3.2: Timeline summarising the actual periods of fieldwork



3.4.3 The relationship between research questions and methods

The congruity between research questions and the design of data collection was primarily considered at the stage of planning. The relationship between research questions and the different methods that were used for data collection is outlined in Table 3.3. As with most in-depth qualitative research works, the sources of evidence that were employed in this study were varied. Freebody (2003, p.82) described this as ‘empirically omnivorous’. The rationale for the use of multiple techniques was not only to triangulate data, but also to gain understanding in more depth (Patton, 2002). In view of the goal of identifying and justifying the research process, the research methods are suggested to be described as specifically as possible and intertwined with theoretical concerns (Burgess, 1985; Crotty, 2004). As a result, Section 3.4.1, 3.4.2 and 3.4.3 provide only brief and general discussions of the research methods, and the descriptions of the specific techniques for data gathering, which were selected to be used in this research, are made in the following sections.

Table 3.3: Research questions and the related methods

Research Questions	Methods for Data Collection
1. What is the feasibility of stimulating young people to make changes for a sustainable future by music learning and teaching?	
a. In what ways are the conceptual dimensions of sustainable development translated into music classroom teaching? Which teaching strategies can be employed?	Pre/post-teaching individual interviews with music teacher, Participant observations in music lessons, Informal discussions with music teacher.
b. What are the participants’ (both children and teachers) actions and interactions within the music lessons? How do they respond to the lessons?	Participant observations in music lessons, Post-teaching individual interview with music teacher, Post-teaching group interviews with students, Informal discussions with music teacher and students.
2. Can music play a transformative role in young people’s knowledge, skills, attitudes and behaviours towards a sustainable model of development?	
a. Which specific ESD outcomes in terms of knowledge, skills, attitudes and behaviours, may be achieved through the medium of music classroom learning?	Post-teaching group interviews with students, Post-teaching interview with music teacher, Pre/post-teaching questionnaires for students, Participant observations in music lessons, Informal discussions with music teacher.

b. What are participants' perceptions with regard to the relationship between music and sustainable development, and the potential role of music education in extending students' learning in ESD?	Pre/post-teaching individual interviews with music teacher, Post-teaching group interviews with students, Participant observations in music lessons, Pre/post-teaching questionnaires for students, Informal discussions with music teacher and students.
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3.4.4 Sampling

Sampling is an essential part of a research project, and choosing the sample carefully is crucial for obtaining confident research findings. 'The quality of research depends not only upon appropriateness of methodology and method but also the suitability of the sampling strategy' (Barker, 2008, p.1). The viewpoint of Walliman (2001, p.174) is that research results are 'only as good as the sample they are based on'. Fetterman (2010 p.11) suggested that the ethnographer should 'attempt to be holistic – covering as much territory as possible about a culture or program'. However, in many experiments, covering an entire population is impossible as a result of the limited time, expense, accessibility and desirability (Martyn, 2009). Moreover, Walford (2007 cited in Tsui, 2011) points out that there is no need to seek generalizability in ethnographical research at all, but a need to choose the study sites in which activities are interesting or important. As a result, in this study, four music teachers and classes of students from four secondary schools in different boroughs of London were selected to be investigated in depth.

A number of possible sampling strategies can be employed by a researcher during the selection procedure of participants (Sanchez-Jankowski, 2002). There are different types of schools in London, from which choosing an appropriate sample school and participants was a key point in the preparation for this ethnographic study. In consideration of the objectives of this research, the sampling procedure in this study followed the principles of purposive sampling, and the following criteria were established and adopted simultaneously for ensuring the suitability of sampling:

-
- Three to four mixed sex state secondary schools in London

There are considerable differences between secondary schools in terms of size, gender, facility, curriculum and the characteristics of students as a result of different types of schools and different social and environmental contexts. In this study, typical state schools in London with similar size, facilities, the characteristics of students, catchment area and Ofsted evaluation results, and the same curriculum – National Curriculum were selected. Moreover, in view of the scope of a PhD project, the gender issue wasn't taken into consideration in this research, and thus schools with the characteristic of mixed-sex seem to be more suitable than single-sex schools to collect more comprehensive information from students, rather than only the perspectives of girls or boys. Lastly, schools with awards like 'Sustainable Schools', 'Eco-schools', 'Healthy Schools' or 'Artsmark Award', or with some experiences on related students' activities towards SD, were the highest priority of selection. The reasons for setting these criteria were that these schools tend to be more interested in issues of ESD and related innovations of teaching, learning and curriculum, and the result of this study may provide them with some inspiration for their future works.

- One music teacher with interests in this research and one ordinary class of KS3 students in each school

Due to the dominant role of the music teachers and students in this educational practice, this point was crucial. To smooth the process of this whole study and achieve its aims, the music teachers selected should have interests in the issues of SD and/or music teaching innovation, and exhibit a desire or willingness to be involved in the fieldwork: agreeing to plan and implement a teaching intervention, to have someone observe their lessons and work with their students administering questionnaires and interviews, to participate in interviews, and to complete an evaluation form after each lesson.

For the selection of participating students, my interest and the review of relevant previous work determined the stage of students in this research was Key Stage 3. Music teachers had the right to choose the level of year group to work with, in accordance with the possibility of integrating SD into the current curriculum of the year group. There was only

one requirement for choosing a class to participate with. As working with a class which is made up mainly of gifted or low ability students might produce some unreliable information, for example, might exaggerate or cover up some real effects of the teaching intervention, one class of students with average or mixed learning and musical abilities and achievement from the selected year group should be given preferential consideration.

The work of identifying appropriate sample schools and securing their agreement lasted for fourteen months. As an international student, being unfamiliar with schools and individuals within the schools, I did not have any pre-existing access to them. The biggest challenge I encountered was finding secondary schools to work with. The detailed sampling process is described below.

1. From March to April in 2012, I asked for assistance from six UK music and ESD associations and organisations¹² by email, and put my research information on three UK forums¹³. After several days, four music association and organisations¹⁴ replied and agreed to circulate the original email to their members, which contained a description of the researcher and the research project, or put it on their monthly newsletter and forums. An editor of Environmental Education Research, who found out about my research from the Music Education Council, also provided help and sent details of this research and my contact information to the journal's subscribers. In these two months, about fifteen researchers, educators and musicians around the world contacted me to express their interests in this research project and gave me some ideas. For example, an informal meeting¹³ was held in a cafe with a musician, who implements a SD curriculum project on songs and animation and worked with primary schools in two councils. I also had a sociable conversation on an online forum with one music teacher/professional musician, who facilitated more than 350 Recycled Music Workshops in primary schools, at festivals and council events. Both of them shared their experiences and strategies of working with

¹² 6 UK music and ESD associations and organizations: National Association of Music Education (NAME), School Music Association (SMA), Teaching Music, Cambridge Music Service, WWF and Music Education Council.

¹³ 3 UK forums: TES, Teaching music and London Sustainable Schools Forum.

¹⁴ 4 music association and organizations: National Association of Music Education (NAME), Teaching Music, Cambridge Music Service and Music Education Council.

schools, and some advice on the implementation of this research was also given. However, only two music teachers emailed me and provided me with some basic information on ESD in the UK schools. In the meantime, negative voices from 4 teachers and musicians appeared on the forum, for example, one person left message that:

'.....Whenever I hear this phrase "sustainable development" I despair - it is simply self deception by the human race. Sustainable development is a lie - and therefore I don't incorporate any of those things into my music lessons.'

2. In order to get more face-to-face discussion opportunities with secondary school teachers who were interested in the field of ESD, I attended a national ESD conference which was organized by Sustainability and Environmental Education (SEEd) in June 2012. It was disappointing that most teachers came from primary schools, and no secondary schools in London participated in the conference. One person, who worked in Suffolk County Council, showed intense interest in the present research topic and willingness to introduce me to two music teachers. Unfortunately, neither teacher worked in London's schools. Moreover, on that day, I met an interesting organization, called 'Cool it Schools', which has worked with many schools in the UK who teach students how to learn SD through art and drama. The conversation began with the similarities between their work and this research, and in the end, they suggested one secondary school in the south of London, with whom they had cooperated before and may be interested in linking ESD with arts again. I emailed this school after the conference immediately, but did not receive any feedback.

3. The strategy of contacting music teachers by email or phone directly was suggested by several experienced researchers. For the purpose of finding appropriate schools and participants which met the selection criteria, several lists were consulted. These were 'Schools of Creativity' provided by 'Creative Partnerships' and a list of 'London Sustainable Schools' provided by 'London Sustainable Schools Forum'. The type and characteristics of all potential schools were checked initially through document analysis before contacting them. From April 2012 to April 2013, I looked for music teachers' contact information from schools' website or by Google, and emailed music teachers

from 101 secondary schools in London: 28 of whom replied. Fifteen music teachers invited me to visit their schools. The purpose and outline of the research were explained to them in more detail. At the same time, a further understanding of these schools, such as the features of catchment area, the content of music curriculum, the characteristics of students and music teachers, and the school surroundings, was acquired. Most of these teachers ultimately rejected my request for a number of reasons, such as their busy schedule, unwillingness to have the curriculum disrupted and withholding of permission by headteachers. Finally, four mixed-gender state secondary schools in different boroughs of London agreed to join the research. In each school, one music teacher and one class of students in Year 7, made up of 25 to 30 students per class and chosen by the music teacher on the basis of the selection criteria, participated in the fieldwork. The detailed descriptions of all participating schools, music teachers and students can be found in Chapter 4.

3.4.5 Documentary method

A comprehensive documentary review and analysis are required by the majority of educational research projects (Hitchcock & Hughes, 1995). Documents can take a variety of forms. The 'documents' here have been classified into two types – 'internal documents' including teachers' Schemes of Work, schools' official documents and reports, the written materials and PPT used in lessons, and the different kinds of written texts produced by teachers and students; and the 'external documents', such as government official documents and reports, and information and newsletters from school and government websites.

In this research, the documentary method was undertaken with three specific goals: Firstly, a number of government documents and reports published by QCA and DfES¹⁵ on Key Stage 3 (KS3) National Curriculum, especially the new music curriculum, the Schemes of Curriculum for KS3 music in each school and the students' music booklets made by music teachers, were collected and analysed for the purpose of building an

¹⁵ DfES: The Department for Education and Skills

understanding of the contextual information for teaching intervention. Next, in order to find out more about the background and characteristics of schools, information from a wide range of sources, such as school prospectuses, brochures for schools, online newsletters and Ofsted inspection reports of schools, were collected and reviewed. Finally, the music teachers' planning for the 6-weeks teaching intervention including the schemes of work and PPT, and all sheets produced and used by teachers and students in the lessons were analysed in an attempt to triangulate data gathering and supplement information, which is collected through classroom observations, interviews and questionnaires. As Simpson (2006a p.105-106) explained in his work, the collection of students' and teachers' pieces of writing, which are part of the lessons, 'develops insights into how understanding is translated from its document use into practice in the classroom'. Additionally, all of the above document collection and analysis employed here can also 'fill in some of the missing data pieces' and 'raise a host of new questions regarding the accuracy of observations and interpretations, necessitating further conversations with the teacher or possibly even another observation' (McEwan & McEwan, 2003 p.82).

3.4.6 Teaching intervention

At the beginning of this research, there were decisions on the practicalities of teaching intervention work that needed to be made in advance: How many lessons would be involved? How long would the music teachers need for lesson planning? Should I offer help when they face difficulties in planning? As an ethnographic research, the length of fieldwork time was expected to be as long as possible. One-term teaching intervention was designed initially, however through the face-to-face discussions with educational researcher and on-line conversations with teachers, I discovered that this period of time appeared to be not feasible for most secondary school teachers, because of their busy work schedules. As a result of this, a discussion was conducted with two music teachers separately, one teacher was from the first sample school, and the other teacher was from the school which withdrew from the project once it had started. Both of them considered that teaching SD in music lessons for one unit – 6 lessons was most feasible for them. In

the meantime, they also expressed their opinions on the issue of lesson planning that since the teaching of SD was totally new to them and they had few experiences on cross-curricular work, examples would be definitively helpful in stimulating their ideas on the connection between SD and music in the lessons.

Through blending music teachers' viewpoints with findings from Summer's works (e.g. Summers, 1994; Summers & Mant, 1995), which reveal that good subject knowledge is essential for the best teaching, once consent was obtained from headteachers, recommended articles and teaching resources from some relevant websites, such as UNESCO, SEEd and WWF were provided by me, to help music teachers develop their own subject and pedagogic knowledge in the area of ESD. Over one to three weeks teachers developed sufficient knowledge on SD and ESD to make a teaching plan or Schemes of Work for the teaching intervention task. In this study, six music lessons were held in six weeks (one lesson per week) in three of the sample schools, whereas the remaining school offered six music lessons within three weeks (two lessons per week) due to the changes in their curriculum (see Chapter 4). Furthermore, in order to 'probe deeply and to analyze intensively the multifarious phenomena' (Cohen, Manion & Morrison, 2011), such as the teaching content, the structure of lesson, the timings of each step and the interactions that occurred during each lesson, the sequence of lessons was audio-recorded to assist in the data collection. Meanwhile, participant observation was undertaken in music classrooms, which is described in detail in Section 3.4.8. Finally, as mentioned in Section 3.4.2, for the collection of as exhaustive information as possible from teachers, over the whole research, the music teachers were asked to complete a self-evaluation form after each lesson.

3.4.7 Questionnaires

Surveys vary in scope from small-scale to large-scale surveys. To identify the relationships between students' pre- and post-teaching knowledge, attitudes, behaviours and skills towards SD, and their perceptions on SD-music lessons, a small-scale questionnaire survey was employed to gain data from all participating students. Two

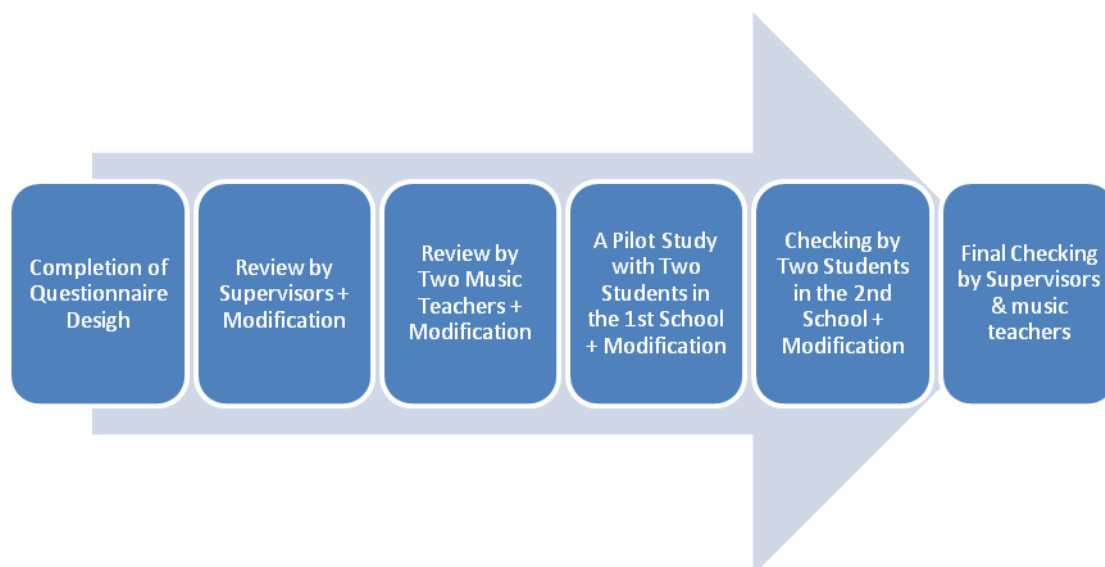
questionnaires were carried out: one at the first stage – ‘Preparation Work’ and the second at the third stage of fieldwork – ‘After Intervention’ (see Figure 3.4). Quantitative researchers always encounter a problem when they use questionnaires for data collection. As Akbayrak (2000 p.5) stated, ‘there is no way of determining how the respondent filled the questionnaire. It is also possible that the questionnaire may have been filled by other person, rather than ‘the real respondent’. In this study, in order to increase the trustworthiness of the quantitative data, students were required to complete the questionnaires in music lessons, and the importance of confidentiality and gaining complete and accurate data from them was emphasised by me at the beginning.

Different question types appeared in both questionnaires (see Appendix 1 & 2). For the purpose of guaranteeing the high rate of valid questionnaires and keeping respondents’ willingness to answer the questions, closed questions, which are less time-consuming and easier for the respondents to complete (Wilson & McLean, 1994; Gilbert, 2001), accounted for the majority of all questions in the questionnaires. Meanwhile, a ‘why?’, ‘allowing for more elaboration’, and a category of ‘other’ ‘for those who cannot find an appropriate pre-coded response’, were provided in some closed questions (Gilbert, 2001). Questions were grouped into three sections and four sections in the pre-teaching and post-teaching questionnaires respectively. Similar questions in terms of students’ knowledge, awareness and behaviours towards SD were designed in both questionnaires for the subsequent comparison in the process of data analysis. Some parts of both questionnaires were somewhat like exercises to test students on what they knew before the six SD-music lessons and what they learned through the teaching intervention in terms of SD as well as music.

Since questionnaires are standardised, respondents’ misinterpretation of the questions is one of disadvantages of questionnaires (Cohen, Manion & Morrison, 2011). In order to ensure the appropriateness of the question setting and the ability of students to understand the questions, the two questionnaires were reviewed and checked by different people (see Figure 3.5). Firstly, once completing the draft questionnaires, it was sent to my PhD supervisors and changes were made relating to both the content of some

questions and phrasing. After the first modification, I discussed the questionnaires with two participating music teachers from the first two sample schools. They identified minor changes in layout and suggested to simplify the language to suit the students' English literacy abilities. The questionnaires were then revised again, for the purpose of reducing the degree of difficulty for children and the probability of misunderstanding the questions, a pilot study, with the aim to increase the dependability, credibility and practicability of the exercise papers (Oppenheim, 1992; Morrison, 1993; Wilson & McLean, 1994), was conducted with two students in other classes of Year 7 in the first sample school, and two students from the second sample school carefully read and checked the simplification of the words and sentences in questionnaires. During the process of checking, all four students were encouraged to highlight the content, which was difficult to understand. In addition to these, in consideration of the slight differences in the schools' students' English literacy ability, each questionnaire was given to music teachers for final checking before each implementation. Students in each school spent around fifteen to twenty minutes completing the questionnaires in their music lessons. In the process, all of them were allowed and encouraged to ask questions about the questionnaires, and I noted all difficulties students encountered in their readings and understandings. Therefore, in fact, the questionnaires were constantly amended until the research was finished.

Figure 3.5: The procedure of questionnaires revision



3.4.8 Observations

Observation, which offers an opportunity to collect 'live' data from 'live' situations (Cohen, Manion & Morrison, 2007 p.305), was employed in this study. In the process of observation for research, the role that the observers take is a particularly important issue and should be considered seriously. The 'roles' are generally classified into two types: 'participant observation' and 'non-participant observation'. Gold (1958), who worked with Junker, described and characterised the observers' roles in a more specific way. There are four types in Gold's (1958) and Junker's (1952 cited in Gold, 1958) typology of observer roles: 'complete participant', 'participant-as-observer', 'observer-as-participant' and 'complete observer'. Each role has its advantages and weakness, and the different parts of a research probably should be matched with different types of role (Burgess, 1984). In this study, in view of the different aims of observations in schools and classrooms, two types of observer roles were employed.

3.4.8.1 School observations

The technique of school observation, which aims to gain a full understanding of the environment in which school participants spend most of their day and where the teaching intervention took place, was 'non-participant observation' with the most common classification, and 'observer-as-participant' according to Gold's mode. Comparing to the roles of 'complete observer' and 'participant-as-observer', 'observer-as-participant' used here calls for more social interaction with informants than 'complete observer', which requires observers entirely outside the social setting and interaction with 'the greatest danger of misunderstanding the observed', and more formal observation and superficial contact with informants than 'participant-as-observer'(Gold, 1958 p.222).

In this study, the preliminary visits were carried out at the first stage – 'Preparation Work' for two to four weeks (see Figure 3.4). I spent average two half-days per week observing each school environment, its facilities, the arrangement of the whole school activities, the operation of school during lunch times and breaks, and teachers' and students' behaviours. I also collected the contextual information of schools from the written sheets

and pictures on the walls, and had conversations with students and school staff during the observations. The informal discussions were designed to be as natural as possible. In order to avoid strange reactions, I tried to talk to students and school staff and join their conversations when an appropriate opportunity arose. These informal conversations were not information seeking all the time, sometimes 'small talk', such as talking about the weather and what was happening in schools, was used to establish rapport with them. The school observations took place according to plans in three schools. In the fourth sample school, after the first observation, one email was sent from the Senior Leadership Team to inform me that in spite of a CRB¹⁶ check I held, I should be accompanied everywhere in the school, except for the staff kitchen and Year Manager corridor, and wasn't permitted to be alone with students, which means that the school observations was restricted here. It should be noted here that the school observation works were carried out throughout the whole data gathering process in schools, with a main concentration on the first two to four weeks.

3.4.8.2 Classroom observations

In this research, music teachers' pedagogical activities and students' response to them were the main focus of the enquiry. After a review of literature on educational observation and ethnographic field work, a decision was made to use classroom observation to get first hand information with regard to what was happening in the music lessons. As Charon (2009 p.182) argued, 'symbolic interactionists believe that it is important to gather data through observing people in real situations'. Participant observation, which is emphasized by anthropological and sociological tradition, characterizes most of both interactionist and ethnographic research and is the key element of effective fieldwork (Fetterman, 2010; Leeds-Hurwitz, 2012; Rock, 2001; Somekh & Lewin, 2011), seemed to be the most suitable method for data collection in this study. As a research technique, participant observation, meaning interacting with people during the activities and watching what is going on (Cowie, 2008), 'distinguishes itself by breaking down the barriers between observer and participant, between those who study and those who are

¹⁶ CRB: The Criminal Records Bureau.

studied' (Burawoy, 1991 p.291). Somekh and Lewin (2011 p.34) argue that 'if we wish to understand the 'other', and how they behave, we need to suspend our taken-for-granted understandings and watch and wait for the meanings in what we see to become clear. Participant observation remains at the centre of the endeavour – getting involved and looking and listening intently – over time'. According to Gold's more specific typology of the participant observer roles, in terms of the classroom observation, I identified my role as 'participant-as-observer', which provides researchers with the opportunity of being part of the setting. The main difference between the 'participant-as-observer' and 'complete participant' role is the issue of 'role-pretending' (Gold, 1958 p.220). While the researcher who takes the 'complete participant' role should be fully part of the setting and keep a covert observation, the 'participant-as-observer' role allows the mutual awareness on the field worker's real identity and the relationship between observer and participants (ibid).

This study, which aims to investigate how SD could be integrated into music classroom instruction, and trace the participants' feelings and responses to the teaching practice, required my personal presence in the pre-intervention setting to watch the teaching activities, participants' interactions and their immediate reaction. Moreover, without knowing the events that happened in the classroom, the comments from participants that were collected from the lessons cannot be made sense of in relation to the teaching (Smith, 1988). In this study, I first planned to present myself as a student in the classrooms for the sake of having more interactions with students to obtain their perspectives. However, the participation in the first normal music lesson made me change my mind, by reasons of the age gap between the students and me, which led to students' misunderstandings of my role as a teaching assistant, not enough instruments provided for me, and the restriction of interactions with other students in lessons. Through a further review of other related research and my consideration about the method in the following lessons, I began to present myself as a teaching assistant with the permission of the music teachers. In the classrooms, I sat with students, worked with them on music activities and discussed with students at an appropriate moment.

Eight dimensions for classroom observation were designed in advance and carried out to provide the following descriptive data. An 'Observation Guide' (see Appendix 3), includes the content of the eight dimensions, was designed and used to stimulate good practice in observation works.

1. Environment: the arrangement of furniture and musical equipment, general condition of the classroom, wall displays and seating arrangement of students and music teacher.
2. Actors: the number, gender and ethnicity of the people involved.
3. Events: the teaching and learning activities, and other events which took place in the lesson time.
4. Physical behaviours: participants' interactions and their own actions, including the body language.
5. Emotional expression: participants' emotions and attitudes expressed on their face.
6. Verbal behaviours: the content of participants' talking and conversations.
7. Time: the sequence of activities.
8. Achievement: participants' performance, including what and how participants were attempting to achieve and whether they accomplished.

As most observers, I was concerned with participants' behaviours – what music teachers and young people do and say during observations. In addition to this, my concern also covered participants' feelings that were arising within the lessons and showed through their facial expressions and verbal behaviours simultaneously. As Delamont (1975) makes clear, users of participant observation want to understand 'how teachers and pupils see what they are doing' (p.15).

3.4.8.3 Techniques for data recording

Throughout the process of teaching and data gathering, field notes, which are considered as the initial stages of 'theoretical formulation' by Strauss and Corbin (1998 p.283 cited in McNaughton, 2008 p.58), was used. Field notes for school and classroom observation were made in a separate notebook and the sheets of 'Observation Guide' respectively. Throughout the process of collecting data from lessons, I not only described what happened in classrooms, but also recorded my thoughts and feelings in the reflective

comments on the 'Observation Guide' sheets. Therefore, broad margins for comment and later coding were contained in the sheets for classroom observations. Moreover, both data documentation and participant observation are in essence subjective (Mack et al., 2005). Either the process of recording or interpreting represents choices and judgments. In order to filter out my biases, I strove for accuracy by keeping descriptive and detailed records and constantly reflected on what and how I wrote down. However, in this study, not enough time for noting the observations completely when they happened, was a crucial disadvantage of participant observation (Foster, 1996), was a difficulty I encountered whilst participating in the lessons. Both Rolfe (2001) and Berg (2007) strongly emphasised that without prompt writing of the field notes, important information and thoughts would be lost quickly or be misrecorded as inaccurate data. As a result of this, I usually grasped every chance to make scribbled notes during the process of either school or classroom observations. The ongoing notes were completed with a record checking work, which used to ensure and control the quality of gathered data, after each visit in school and before the end of the same day.

Since it does not appear to be possible to capture everything through making field notes, audio and video recordings were regarded as two invaluable tools for overcoming the weakness of field notes to some extent. While all sample schools politely refused to use video recording equipment, which seemed to be a sensitive instrument for data collection in schools, camera and audio recorder were permitted to be used throughout the classroom observations. The major advantage of both audio recording and camera was providing and preserving all important observation data for me. As Noguera (2011 p.85) described, they 'acted as an additional set of ears and eyes that allowed me to hear and see what I had missed' during the period of observation. These audio recordings and photographs were replayed after the field work in each school, and the additional important data was added to my notes.

3.4.9 Interviews

Interviews, both formal and informal, as the ethnographer's most significant data gathering technique and an essential instrument for an educational researcher (Fetterman, 2010; Scott & Usher, 2011), were used in the research. While questionnaires have 'limited flexibility of response' and it is easier to obtain superficial answers from respondents (Cohen, Manion & Morrison, 2011 p.377), interviewing, which aims to gain descriptive data from respondents in their own words and make implicit information explicit by their answers, provides researchers with potential access for understanding past events as well as participants' feelings, viewpoints and motives in more detail (Bell, 2010; Dyer, 1995; Scott & Usher, 2011).

Different types and usages of interviews are chosen by different qualitative researchers for data collection. In this study, the use of semi-structured interviews, as one method which is frequently employed in a small-scale educational research project (Robson, 2002), was considered most appropriate for exploring participants' opinions and feelings. The flexibility of semi-structured interviews was the main reason why I adopted this approach. Each person has particular ways of thinking, different English literacy ability and preferred communication modes. As an interviewer, it seems to be unreasonable to approach all respondents in the same way. In semi-structured interviews, the role of the interviewer is that of facilitator, who is responsible for encouraging the interviewees to talk about a variety of topics with a certain degree of freedom (Noor, 2008; Opie, 2004 cited in Noguera, 2011). This kind of interviews offered me enough flexibility to approach each interviewee differently and to 'pursue any questions in greater depth' (Hsu, 2003 p. 136; Noguera, 2011). Moreover, in view of the limited knowledge and understanding ability of the terms and issues on SD and ESD that most students have, semi-structured interviewing, which allows the explanation of some ambiguities and the correction of any misunderstanding of the questions by the interviewer (Drever, 1997), was chosen to ensure that the interview would be 'more focused, free flowing and unthreatening' (Hsu, 2003 p.136).

The general structure of semi-structured interviews requires the identification of the main interview questions in advance, 'so that the detailed structure can be worked out during the interview' (Altun, 2005 p.102), and the interviewees can express opinions and ideas freely and at length without interviewers' anxiety concerning their 'aimless rambling' (Wragg, 1982 p.10 cited in Hsu, 2003). In this study, a set of pre-planned questions and issues were designed and listed before the field work started. All the initial questions were formulated based on document analysis, previous relevant research experiences from other people and myself, my teaching experiences and relevant theories, all of which would enable the research questions to be addressed. As with the design procedure of the questionnaires, discussed in Section 3.4.7, the pre-planned interview schedules were also revised several times after feedback from supervisors, music teachers and two PhD students. The interview was piloted after which final-revisions were made. Meanwhile, the space for unanticipated questions which arose from spontaneous discussions during interviewing was considered and given in the later interviews.

The setting of interview questions is one of the determinate factors in the quality of the interview (Merrell, 2007). Open questions, which have an advantage in stimulating respondents' free thought, free discussions and extensive answers (Noguera, 2011), were asked frequently during interviews. Moreover, although open questions facilitate interviewers to obtain a wider range of spontaneous opinions from interviewees in their own language (Altun, 2005), in view of most students' inexperience in being interviewed and some students' apparent shyness which made them reluctant to talk too much during group discussions, closed questions, which are easier to be answered, were included in the interview schedules as well. There were some problems brought out by 'flexibility' in the process of interview, for example, some of the interviewees strayed from the point of discussion, and sometimes very short responses were given. Therefore, some techniques were applied to increase the effectiveness of obtaining information from respondents. The interviews, which were conducted on the basis of the structured interview schedules, always started with a less demanding question, then moved to more demanding ones, such as asking from 'What did you learn from the 6 lessons?' – a less

demanding question, to 'Did you learn anything about sustainable development in your lessons?' – a more demanding question. Secondly, follow-up questions, which contain the words like 'why' 'how' 'what' and sentences like 'could you give me an example?' and 'could you tell me more about it?', were used after all closed questions and some open questions to seek clarification, elaboration and expansion of detailed information from respondents.

To maximise the use of appropriate interview questions, the creation of friendly and relaxing atmosphere throughout the process is important. Hoevermeyer (2005 p.105) argues that respondents sometimes do not provide complete answers to a question, for example, being 'unfamiliar and uncomfortable with interviewing', 'reluctant to talk', to 'try to avoid an area or issue' or being 'inherently shy'. Therefore, some strategies were developed and used in this study for minimizing the uncomfortable and insecure feelings of participants and eliciting their genuine thoughts. First of all, ice breaker questions and statements, such as weather and recent school life, were designed and used when participants came and sat down, with the purpose of putting participants, as well as me, at ease and set off to a friendly start. Moreover, throughout the entire interview, I made use of the verbal and non-verbal acknowledgement of respondents' replies, including smiling, nodding, showing interests, making encouraging sounds and expressing praise and appreciative statements, to relieve interviewees' remaining uncomfortable feelings. Merrell (2007) believed that the responses from a sensitive interviewer can make a contribution to the amount and quality of subsequent self-disclosure.

Observations, questionnaires and interviews, as three main research strategies, inform and support each other (Hammersley & Atkinson, 2007). Both observations and questionnaires created a direction for the interviews. In this study, most interview discussions with students and music teachers were based on their impressions, feelings and evaluative responses to the class-based activities. In Smith's (1988 p.50) opinion, sharing what participants experienced and what the researcher observed is crucial, 'not only for subsequent triangulation of data but also to create the conditions in which the interviews could be productive'. The teaching intervention that music teachers, students

and researcher participated in together provided all participants with a shared topic to discuss. In addition, a number of questions were also designed to clarify unclear answers and cross-check and expand the responses from questionnaires. In the planning and interviewing, my reflections on information collected in questionnaires and observation notes helped me map out and refine the questions on the interview schedule. Simultaneously, data obtained from questionnaires and observations were deepened and cross-checked through interviewing. In brief, without questionnaires and observations, conversations with participants could not be as fruitful as they eventually became (Smith, 1988), and the data could not be developed fully without working on the three techniques together (Simpson, 2006a).

3.4.9.1 Semi-structured individual interviews with music teachers

One music teacher from each of the four sample schools was interviewed individually in their own school. Compared to the group interviews with students, more detailed and reflective information could be generated through individual interviewing, even though it is more time-consuming (Pitts, 2005). A pre-teaching interview and a post-teaching interview were conducted with each music teacher and both lasted around 1 hour. The pre-teaching interviews, which took place between the one to three weeks preparation time and the teaching intervention, were planned to enhance the mutual understandings between music teachers and me in the initial stage of the project. The pre-teaching interview schedule consisted of five main sections (see Appendix 4) and covered the topics regarding the music teachers' background, their pre-teaching conception, attitudes and behaviours towards SD and the six SD-music lessons they planned. The post-teaching interviews (see Appendix 5) were carried out within one week of completing the teaching intervention. The focus of this conversation was the six SD-music lessons, to explore their reflections on what had happened, and to ascertain their post-teaching conception, attitudes and behaviours towards SD. Setting pre-teaching and post-teaching interviews enabled the data to be comparative.

3.4.9.2 Semi-structured group interviews with students

In order to create an environment in which the students' emotional tension and shyness could be relieved, they could feel more relaxed, comfortable and confident to talk freely, and elicit a dependable and wide range of responses from children (Cohen, Manion & Morrison, 2011; Noguera, 2011), group interviews, which generate data based on the synergy of the social interaction of the group (Green, Draper & Dowler, 2003; Rabiee, 2004), were undertaken to collect adolescents' perspectives in this study. At the outset, as a greater amount of time was required for data collection by group interviews than questionnaires (Akbayrak, 2000), music teachers recommended me to use questionnaires to substitute for all interviews with students so as to ease organization and save time. However, a group interview, which allows a group of participants with different or common understanding to produce knowledge through sharing their thoughts, ideas and experiences, tends to can gain more complete, in-depth and valuable information from respondents than questionnaires (Anderson, 1998; Cohen, Manion & Morrison, 2011; Sarantakos, 2005; Silverman, 2005). Moreover, in spite of the inhibition of emerging personal issues and the restriction of the number of interview questions that group discussions caused, group interviews were less intimidating than individual interviews for children (Cohen, Manion & Morrison, 2011), thereby provided a useful forum, with unequal power relationship between adult researchers and adolescents in which students could be encouraged to 'voice their opinions, develop their points and challenge and extend their own and other's thoughts' (Noguera, 2011 p.89). As Mahon, Glendinning, Clarke and Craig (1996) argued, children tend to prefer to express their opinions in groups, rather than during individual interviews with adults.

In the process of interviewing, I worked to foster productive interactions among students and to maintain the focus of the interview questions. Participating students communicated with each other, and most of them were actively involved in the conversations and encouraged other students to articulate and share their thoughts. Following Lewis's (1992) suggestion that a group of around six or seven is an optimal size, each class of students was divided into four or five groups with six students each. Each group interview lasted around thirty minutes and took place after the teaching

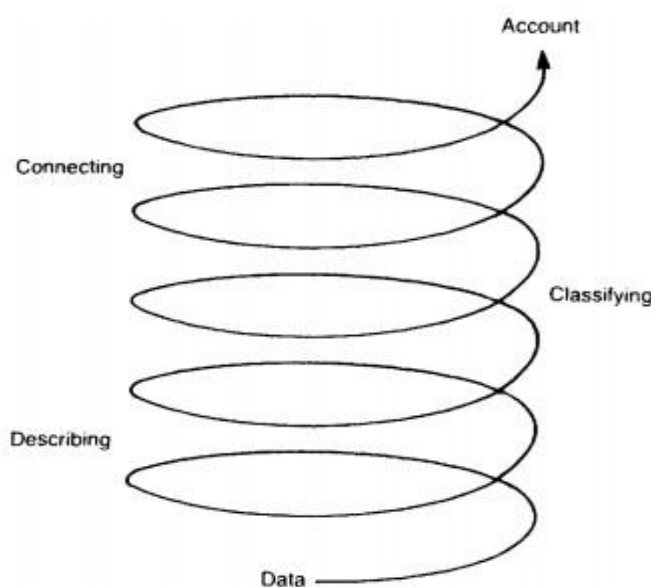
intervention has finished. Respondents were arranged to sit in a circle with interviewer, which seemed to be helpful in facilitating dialogue and interaction among all participants (Noguera, 2011). Two chief purposes of the interviews were seeking students' viewpoints and evaluative responses on the six SD-music lessons, and clarifying and expanding information from questionnaires and observations.

All interviews were tape recorded with participants' permission and transcribed for later analysis. The interviews, as well as all the other research activities within the school sessions, were ended with my expressions of sincere thanks to all participants.

3.4.10 Data analysis

The nature and quality of data analysis was one other pivotal issue that needed to be taken into careful consideration in this study. Data analysis is presented by Dey (1993 p.54) as a process which proceeds in an orderly and iterative fashion, through 'the various facets of description and classification to connecting concepts and producing an overall account' (see Figure 3.6). Miles and Huberman (1994 p.10) summarised three concurrent activities in the process of analysing qualitative data: 'data reduction', 'data display', and 'conclusion drawing and verification'. This was undertaken by transcription, annotating, classifying and coding.

Figure 3.6: Qualitative analysis as an iterative spiral (Dey, 1993 p.55)



Data preparation was conducted immediately after completing the data collection for making the material manageable. Few data can be obtained in an immediately analyzable form, which means that a large number of data should be prepared by the researcher before the start of analysis (Sapsforf & Jupp, 2006). The greatest need for preparation is the data collected from audio recordings, including the classroom observation data and interview data. Even though the task of transcription is generally perceived to be time-consuming and taxing (Noguera, 2011), I found working from the raw data to be helpful in familiarising myself with the recorded data, and it allowed me to generate initial insights for its subsequent classification. In order to avoid misunderstandings and misinterpretations, the original information was retained as much as possible, and all of the audio-recorded interviews were transcribed verbatim, including the grammatical errors which occurred in the conversations. As Noguera (2011) proposed, the exact words, which respondents used to express ideas, are essential to be taken into account. Data filtering was carried out with questionnaires. In order to 'identify and eliminate errors made by respondents' (Cohen, Manion & Morrison, 2007 p.347), each questionnaire was checked in three aspects: completeness, accuracy and uniformity (Moser and Kalton, 1977) 'to ensure that it is legible prior to data capture' (Gilbert, 2001 p.99).

There are many ways to analyze research data. Having accumulated, transcribed, and sorted the data, the first task was to make sense of the entire data, and allocate them to the four research sub-questions. Colour coding, which stimulated a general overview of all the data for further analysis, was employed here to identify the textual data that related to each research question. 'Semiotic visual analysis' approach was employed for the visual data – photographs (Johnson & Christensen, 2014 p.590). The symbolic meaning of each image was identified, interpreted and noted down at first, and then allocated and coded each photograph to different sub-questions. Next, for the diverse range of data which had been categorised and belonged to each sub-question of research, thematic analysis, one of the commonly used methods of qualitative analysis (Aronson, 1994; Pearson Education, 2010), was used. Thematic analysis involves both induction, which is used to create themes, and deduction, which can verify these themes (Subvista, 2010).

Four analytic processes were employed in this research. Firstly, since the approach to thematic analysis ‘allows themes to emerge from the data’ (Subvista, 2010 n.p.), whether the researcher is familiar with the research data becomes a key to the expedited and insightful thematic analysis (Pearson Education, 2010). I coded the data again following data familiarisation, made notes of major topics and annotated my thoughts in the margin over several readings. The next step to the thematic analysis was to combine and sort similar or related topics into sub-themes. As Leininger (1985 p.60) identified, themes begin to emerge by ‘bringing together components or fragments of ideas or experiences, which often are meaningless when viewed alone’, and the ‘coherence of ideas rests with the analyst who has rigorously studied how different ideas or components fit together in a meaningful way when linked together’. It was a vital stage in the analytic process to examine and define the sub-themes, and the original data relating to the themes was also re-examined carefully to avoid the omission of data. After the re-examination of the name, definition and supporting data of each theme, the final form of these themes was constructed, described and illustrated with a few quotations from the original text to enable readers to fully understand their meanings.

Throughout the whole process of data analysis, the data transcribed, organised and interpreted was reviewed by the four music teachers and critical friends to ensure its accuracy and trustworthiness. Firstly, since English is my second language, my misunderstanding of the meanings that the participants expressed may have occurred in the process of data analysis, especially the transcription. As a result, during transcribing, one British friend helped me to transcribe some unclear words or sentences. After completing the transcription, I sent the original interview transcripts to participants for checking and comments to ensure the authenticity of their responses. Due to not recording students’ names in each interview group in consideration of the confidentiality issues, only the transcribed conversations with music teachers were returned to themselves. Moreover, according to Neuman (2003), collecting data from social settings, which can provide uncertainty, leads to the subjectivity in the process of data analysis and interpretation. Five main factors may have influenced the findings of this research: my past work and research experiences, the cultural and language discrepancy, the

research methods I used, my knowledge of ESD and my collaborative relationships with all participants. Therefore, in order to establish the credibility of analysis and 'minimise the distorting effects of personal bias on the logic of evidence' (Lather, 1991 p.65 cited in Law, 2003), the emergent themes were reviewed by two critical friends and discussed with them. One friend was an early researcher who understood the objectives and the detailed research procedure of this study, and another friend was a PhD student with a similar background in education.

3.4.11 Positionality

A researcher's positionality, such as their age, gender, personality, nationality, social and cultural background, and life and working experiences, has an influence on the conduct of fieldwork (England, 1994). In this study, I worked as a multi-positioned researcher with a state of 'in-between-ness' (Tooke, 2000 p. 217). More specifically, I was both an outside observer belonging to a different culture and with different life experiences, and an 'insider' with knowledge of and working experiences in music teaching and ESD. It is deemed to be implicitly contradictory to separate the researcher's status as an outsider and an insider (Kanuha, 2000; Moore, 2012), as this status changes at diverse points in a project (Allen, 2004). As Mullings (1999 p.340) argued, because of the 'dynamism of positionalities in time and through space, no individual can consistently remain an insider and few ever remain complete outsiders'. As a result, the fluidity of my position as an outsider and an insider in the present study and the impacts that both positions made on the research are explained.

My status as an outsider in relation to the UK and UK schools made me terribly anxious throughout the research. Before entry into the PhD programme, although I had lived in London for a year, I still knew very little regarding education in the UK, such as UK culture, its education system, the National Curriculum and schools in general. Therefore, in order to build an understanding of the contextual information for teaching intervention, as discussed in Section 3.4.5, a number of documents and reports from government and schools were collected and analysed, once the research subject was identified. Moreover,

complying with suggestions from Mulhall (2003) and Somekh and Lewin (2011) for outsiders in fieldwork that it is better to spend the greater amount of time in the field earlier on capturing the social setting in which defined social group members function, I decided to enter the research venues before the teaching intervention in its entirety. This enabled me to 'define the field, identify key individuals to work with, forms of data collection that are appropriate and some sense of the challenges' (Somekh & Lewin, 2011 p.36) I would face. As mentioned in Section 3.4.1, having identified the four sample schools, I made exploratory visits to each school for a further understanding of the whole school, including the background and characteristics of schools and students, the school lives of teachers and students, the implementation of ESD and the National Curriculum and the music classroom teaching and learning. I spent three to five half-days over two to four weeks in each school for the preparation work, and took advantage of the opportunities of observations and conversations to find out relevant information.

The productive co-operative relationship between participants and researcher is fundamental to the success of data collection (Law, 2003). However, as an outsider of the participating schools, there was a high probability that students would feel uncomfortable with me and look upon me as a tiresome person. During group interviews with students, although follow-up questions allowed me to collect more information, the students in the trial group still seemed to be unenthusiastic to join discussions, which may increase the likelihood of producing complete and inauthentic responses. According to Brooker (2001 cited in Noguera, 2011), adolescents are unwilling to share their experiences, true feelings and opinions with unknown adults. I therefore thought that the establishment of positive rapport and trust through being in the school before the intervention took place would be pivotal in facilitating the genuineness and frankness of respondents' answers. As a result of this, acquaintance with the participants, which was suggested by Noguera (2011), was the first step to help me to be perceived as trustworthy. Throughout the fieldwork, especially at the beginning stage, in each school, I seized various chances to build familiarities with both teachers and students. I tried to have conversations with them during breaks and sometimes had lunch with them, which greatly contributed to smooth running of the subsequent research activities for data

collection. For example, a girl, who had lunch and an animated conversation with me in School A, behaved with excitement and talked a lot in interview. Moreover, the position as an outsider, which appeared to afford more trust from students than insiders, positively affected some of the answers and responses given by them. In the process of data collection through questionnaires and interviews, more than one student, especially boys, repeatedly sought assurance of confidentiality, before they presented some sensitive information or negative viewpoints. It seems that most of them were quite willing to share some interesting things and their secrets with me. My position, which made students think I was unfamiliar with their teachers and believed that I would not betray their secrets to teachers, overcame their uncomfortable and insecure feelings.

As mentioned in Section 1.2, I had been teaching music for four years in China, and had experience in students' outdoor learning of ESD at a secondary school. I had undertaken my Masters degree investigating the relationship between ESD and China's music teaching. The remarkable combination of the above experiences and my educational experiences as an MA and PhD student in London, enabled me to be sensitive to valuable data, such as some distinctive teaching strategies, attractive classroom events and participants' abnormal responses, and to collect and analyse the data in a professional way. Moreover, the combination of my status as an insider with relevant professional knowledge and the status as a cultural outsider helped me to see things from a different perspective, and sometimes find points which were worth looking into, which an insider might overlook. As Allen (2004) highlighted, an insider, who was familiar with participants, might ignore individuals' routine behaviours, which was considered as a risk by Moore (2012). During post-teaching interviews, the music teachers in Schools B and C commented that some questions I asked were quite interesting, and they had never thought about them before.

As an insider during the research, I remained conscious of my own influence on the process and outcomes of the teaching intervention. As stated in Section 3.4.8, presenting myself as a teaching assistant in music classrooms, provided me with reasonable opportunities to get close to students and have conversations with them. However, a

dilemma for me was the level of participation in the teaching assistance work. Students' requests for assistance and my working experiences with regard to teaching made me always want to engage fully in my role as assistant with students. However, engaging more as a participant in the research situation than intended could 'taint the data' (Moore, 2012 p. 12), for instance, it could affect the achievements of students. Therefore, in the lessons, I tried my best to gain observation data and the perceptions of participants and help students solve simple problems, such as looking for lost work sheets and solving technical problems on keyboards, but avoided teaching or disciplining students, so as to reduce the impacts on the setting, people and the data that was generated by my involvement. For music teachers, I did not provide any suggestions or make comments on their planning and implementation of lessons for the guarantee of the authenticity of data.

3.4.12 Ethical issues

As Marshall and Rossman (1999) stated, the daily life and activities of participants will be affected by the research, so it is crucial to take ethical issues into account before the study commences. The important ethical task in qualitative research 'is to secure voluntary consent from participants and refrain from releasing information' for protecting their both emotional and physical safety (Law, 2003). There are some strategies that were designed and adopted to avoid ethical problems as follows.

Informed consent is achieved through written and verbal forms of communication. Since the whole research project was conducted in secondary schools, the official permission from the gatekeeper of the school was essential and needed to be sought at the initial stage of the project (Bell, 1991; Cohen, Manion & Morrison, 2011). Therefore, once I got a CRB disclosure and the verbal promise of participation from music teachers, I contacted their headteachers and sought informed written consent from them immediately. Following this stage, for protecting and respecting the participants' rights of freedom and self-determination, informed written consent was also sought from participants – both the music teachers and students. As all participating students were

under sixteen years old, an informed opt-out approach, was employed for parents and administered through each school, resulting in the final identification of the sample schools and participants.

Moreover, in order to enable headteachers, music teachers, students and parents to make an enlightened decision (Homan, 1991), when I first contacted them, full information about the project was provided. At the outset of meeting with headteachers, music teachers and students, verbal self-introduction and explanation of the PhD project were given before presenting the consent forms (see Appendices 7 & 8). In the meantime, an information leaflet (see Appendices 9, 10 & 12), which included the research aims and process as well as the reasons for and potential risks of children's participation, was provided to them, and any questions that they had regarding the research were answered. For parents, the information leaflet was given with an opt-out form (see Appendix 11), which meant that they were offered the right to opt their child out of the research.

It was the first time the majority of students had filled in a questionnaire and been in a group interview, and thus some of them appeared anxious and stressful about the both research events. It can be seen that building trust and making participants feel respected, accepted and safe were necessary at the start of each questionnaire and interview. With the guarantee of the ethical issues to all respondents, I again explained to participants, both music teachers and students, why and how to work with questionnaires and interviews, re-informed the issues of confidentiality, and asked to reaffirm their consent at the beginning of the each interview and questionnaire respectively. Simultaneously, they were reminded that they can withdraw from the project at any time without reasons. More details about the ways of implementation are presented as follows.

Before each questionnaire was administered, students were informed about why the information was being collected, why they should reveal their opinions and how the results will be used. I emphasised that the purpose of the questionnaires was to collect their honest feelings and ideas, rather than to test them, and reassured them that there

were no right or wrong answers to these questions and their negative response is as useful as a more positive opinion.

For interviews, the consent from respondents on audio recording was sought. In an attempt to put interviewees at ease, I reminded them that they had the right to opt out or ask me to turn the voice recorder off at anytime. At the same time, some ground rules for the discussion were established to reduce the possibility of the interviewees 'contriving their answer from fear of disappointing the researcher by giving a response that suggests uncertainty' (Noguera, 2011 p.90). For example, it was acceptable and legitimate to refuse to answer some questions, say 'I don't know' or ask the researcher to explain the meaning of a question. Note-taking, which hindered me from listening and discussing attentively and may restrain interviewees' responses because of their misunderstanding of this action as an evaluation, was not employed here. Moreover, the importance of the place of interviewing, which was emphasised by Gilbert (2001), reminded me to create good conditions for the interviews through negotiation with music teachers. All participants were interviewed in their schools, which can make them feel more relaxed and safe than in the researcher's territory. Music teachers were interviewed individually in their own offices or music classrooms in accordance with their preference, and the students were interviewed in groups in their classrooms, the corner of the corridor, which is very close to their classroom with few people passing, or the room adjacent to the music classrooms, which has a window, so that the interviewees and people in the music classrooms can see each other. During the interviews, I kept the door ajar so as to prevent participants, especially students, from feeling insecure and trapped, and the music teachers or class teachers stayed in the room next to the interview location, to ensure that students felt safe.

Privacy and confidentiality are crucial to the success of a research project (Morrow and Richards, 1996 cited in Barker, 2000). As suggested by Bell (1991), Frankfort-Nachmias and Nachmias (1992) and Gilbert (2001), a range of techniques was employed in this study. Firstly, no personal data on the participants was kept, except for teachers' names and email addresses. All research data was kept secure and confidential. Personal

contact details of professionals and the audio and visual recorded data were kept in my computer with password protection, and all relevant paper copy was locked in my drawer. Moreover, the data was held in anonymised form. Students' questionnaires and interviews were anonymised, and the identities and locations of individuals and places were concealed in the published results. Pseudonyms were used for each respondent, and the schools' names were anonymised by using 'School A', 'School B', 'School C' and 'School D'. Lastly, I kept in touch with music teachers during the course of study and went back to participating schools after completing my research to report my findings. Having discussed with headteachers and teachers about the most useful form in which these results can be communicated to them and to the students, a summary of the research or the copy of the final report will be sent or distributed to head teachers and music teachers to show my appreciation of their support during this research.

3.5 Summary

In brief, this research is embedded within the philosophical and theoretical underpinnings of constructionism and symbolic interactionism. By giving attention to music and ESD in the present study, the relationships between the chosen paradigmatic positions and the research topics were identified, with explorations of the influence of the two worldviews on the research process and research questions. Ethnography, as the preferred methodology, was influenced by the two philosophical and theoretical notions, and its relevance to educational research was highlighted. Fieldwork was conducted in four secondary schools in London and lasted for ten months to address the issue of ESD in the process of music education. A range of research methods for data collection was employed, including documentation, observations, questionnaires and interviews. Moreover, throughout the research, both outsider and insider positions of the researcher made impacts on the adoption of specific research techniques as well as on the research findings to a certain extent. The chapter ended by an explanation of the ethical issues faced in the research. The next chapter will provide the context for the case studies, in terms of music education in England, sample schools, research participants and the

other various aspects which composed the teaching intervention programmes proposed in this study.

Chapter 4 The Context of Research

4.1 Introduction

The contextual information on the schools, where the data for this study was gathered, and the descriptive data about participants, who work and study in the research settings and were involved in the research project, are presented in this chapter. As some researchers (e.g. Altun, 2005; Fullan, 1991; Sevik, 2001) discuss, the contextual factors of particular settings and the participants' backgrounds can influence the performance of participants who work in it, as well as their perceptions, attitudes and behaviours towards their performance. This chapter is important for the study methodologically, since it facilitates more comprehensive thinking and analysis of the data obtained, and helps to 'draw more reliable and valid conclusions from the findings as a whole' (Altun, 2005 p.138).

In this chapter, the descriptive data about England's compulsory education system, secondary music curriculum and the characteristics of music classroom teaching are presented in Section 4.2. Then, the background information about the four participating schools is depicted in Section 4.3. Finally, Sections 4.4 and 4.5 presents the different characteristics and profiles of each music teacher and each class of students. The data presented and analysed in this chapter are obtained mainly through the use of the documentary method, school observations, pre-intervention classroom observations, pre-teaching interviews with music teachers, pre-teaching questionnaires with students and informal discussions with school staffs and participants. The implications of some contextual information are provided within the discussions in the next three chapters.

4.2 Contemporary music education in England

Due to the fact that different cultural contexts can produce dissimilar approaches to engaging in the sustainable development agenda (Zhang, 2009) and the relevance of the content of teaching and learning and the characteristics of the educational systems of

countries (Altun, 2005), a review of documentary evidence concerning the education system and the current situation of music education in England is indispensable for a non-British researcher before researching. As a result, this section is followed by the presentation of three themes: including the educational system, the music curriculum and music class teaching.

4.2.1 The compulsory education system in England

There was epochal reform of the educational system in England in 1988. The 'Education Reform Act 1988', introduced a National Curriculum and 'key stages' in schools, and stipulated that full-time education is compulsory for every child aged between 5-16 (inclusive) in England (Cui, 2004; Halpin, 2010; UK Parliament, 1988). English compulsory education is normally divided into four key stages (Halpin, 2010; Rogers, 2005; UK Parliament, 1988; Yan & Li, 2007), see table 4.1:

Table 4.1: The key stages of compulsory education in England

KEY STAGE	AGE	YEAR GROUP	TYPES OF EDUCATION
Key Stage 1	5-7	1-2	Primary education
Key Stage 2	8-11	3-6	
Key Stage 3	12-14	7-9	Secondary education
Key Stage 4	15-16	10-11	

English schools can be categorised into different types. In the majority of cases, full-time compulsory education in England is provided by state (maintained) schools and independent schools (DCSF, 2008a). In England, all five to sixteen years old children are entitled to a free place at state schools. There are different types of state schools. The most common ones being:

- *'Community schools, controlled by the local council and not influenced by business or religious groups.*
- *Foundation schools, funded by central government via the local education authority, have more freedom to change the way they do things than community schools.*
- *Academies, run by a governing body, independent from the local council - can follow a different curriculum, but they still have to follow the same rules*

on admissions, special educational needs and exclusions as other state schools.

- *Grammar schools, run by the council, a foundation body or a trust - they select all or most of their pupils based on academic ability and there is often an exam to get in.* (UK Government, 2013 n.p.)

According to DCSF (2008a), the vast majority of pupils receive free education in local authority maintained schools - state schools, and the rest of children go to faith schools or independent fee-paying schools.

It needs to be noted that all state schools are required to follow the same National Curriculum, except 'academies'. Since 1988, 'England has had a fully implemented and state-mandated curriculum for its government-funded schools', and Part 6 of 'Education Act 2002' reconfirmed the structure of the National Curriculum, which 'includes the subjects that schools should teach' (Halpin, 2010 p.1; UK Parliament, 1988; UK Parliament, 2002). The National Curriculum in England is made up of three 'core' subjects of English, Mathematics and Science, which are compulsory for all pupils aged 5-16 in state schools; and nine non-core 'foundation' subjects are compulsory at one or more key stages (Cui, 2004; Halpin, 2010; QCDA, 2011; Rogers, 2005; Yan & Li, 2007):

- Art and Design (not compulsory at Key Stage 4)
- Citizenship (not compulsory at Key Stage 1 and 2)
- Design & Technology (not compulsory at Key Stage 4)
- Geography (not compulsory at Key Stage 4)
- History (not compulsory at Key Stage 4)
- Information and Communications Technology (compulsory at all Key stages)
- Modern Foreign Language (not compulsory at Key Stage 1, 2 and 4)
- Music (not compulsory at Key Stage 4)
- Physical Education (compulsory at all Key stages)

4.2.2 England's secondary music curriculum

In 1992, the Department for Education (DfE) introduced the first National Curriculum in Music (DfE, 1992), which contributed to ensuring 'a continuing place for class music in

the 'national' school curriculum' to a great extent (Tate, 2000 p.67), for school children in England. The most recent secondary curriculum was published by the Department of Education (DfE) in 2013 and implemented in state schools in September 2014. As this research was carried out in 2012 and 2013, the thesis concentrates on the previous version of National Curriculum, which was published in 2007 by QCA and subsequently taught in schools from September 2008 to July 2014. Under the National Curriculum, all secondary students up to the age of fourteen in state schools of England must be given opportunities to 'have access to an ordered and consistent musical education' (Philpott, 2001 p.13). In other words, they are entitled and statutorily required to sing, to play musical instruments, to listen to, appraise, compose and perform music (DfES, 2004; Henley, 2011; Rogers, 2005; Rogers, 2006; Tate, 2000). England's national curriculum in secondary music, which allows for differentiation in teaching and provides a framework for regular assessment, aims to assure that all young people have continuity, achievement and progression in musical learning through a programme of study based on composing, performing and listening (Philpott, 2001; QCA, 2007). The aims and the main principles of the National Curriculum 2007 for music at Key Stage 3 (KS3) were extracted and identified in Table 4.2. In the cross-curricular study, it is especially noteworthy that some opportunities were suggested to be integrated with the music learning of KS3 students, including making 'links between music and other subjects and areas of the curriculum' (QCA, 2007 p.7)

Table 4.2: A summary of the key ideas from KS3 music national curriculum (QCA, 2007)

Curriculum Aims	'Learning and undertaking activities in music contribute to achievement of the curriculum aims for all young people to become: successful learners who enjoy learning, make progress and achieve confident individuals who are able to live safe, healthy and fulfilling lives responsible citizens who make a positive contribution to society.' (p.2)
Key Concepts	Integration of practice Cultural understanding Critical understanding Creativity Communication
Essential Skills & Processes	Performing, composing and listening Reviewing and evaluation

During recent years, there has been widespread concern over the adjustment and reform of the music curriculum, and much professional controversy and debate from philosophers, musicians and teachers appeared at the same time. In England, most teachers were fully aware of the recent changes in national curriculum in music, and have been influenced by the national curriculum arrangements particularly with reference to assessment and its structure (Tate, 2000). A study by Gordon (1999) found that music teachers he interviewed seemed to have a generally positive view of the National Curriculum, and the music curriculum was deemed to be an 'evolutionary step' which enabled them to think about their own pedagogy. However, there was a hot debate on the content of the music programme. Whereas some experts were dissatisfied with 'overly generic statements' in the curriculum and a lack of specific description of content, which insufficiently guides the sequence of teaching (DfE, 2010), others believed that the curriculum 'is no more than a basic outline which sets out certain principles and parameters' (Ni, 2009; Philpott, 2001; Yan & Li, 2007). Gordon (1999 p.38) suggests that 'there does appear to have been a possible decline in teacher autonomy', and Philpott (2001) and Yan and Li (2007) summarise and complain that government has too much control over music education, for this reason they objected to the implementation of a national curriculum in music.

4.2.3 Music class teaching in England

With the different background of history and culture from other countries, secondary schools in England have their own educational system and National Curriculum, with the distinctive characteristics of the ways of teaching in music classrooms.

4.2.3.1 Instructional mode

Lower secondary schools in England favour one weekly lesson of music for each academic year (Tate, 2000). As Tate (2000) clearly indicates, compared with an intensive approach common in the USA, the weekly approach allows children to maintain contact with the subject throughout the whole academic year and this helps raise the status of music in the National Curriculum. Furthermore, in England, the average number of

students in a music class is about 24, who, in more than half of music lessons, engage in group work even though some organizational problems are more likely to emerge by this kind of working style (Tate, 2000).

4.2.3.2 Teaching content

There is not a nation-wide unified teaching content and textbook for music in England. Teachers have freedom in the selection of their course content and the formulation of teaching plans according to their own musical special skills and the confines of musical knowledge, to interpret, deliver and achieve the National Curriculum requirements (Rogers, 2005; Yao, 1996). Yao (1996) concluded that the main content of England's class teaching for secondary music is knowledge of musical theory (such as reading music), skills of music performance (such as singing and playing instruments), music appreciation (especially the understanding of music styles), and knowledge about music history and musical aesthetics.

4.2.3.3 Teaching facilities

With the support of music education in England from governments and schools (DfE, 2011; Henley, 2011), high-level facilities for music class teaching are provided for most students to develop their skills in music appreciation, singing and making music. Tate (2000 p.176) shows that the majority of secondary schools in England had purpose built spaces for teaching class music, instruments in many classrooms she observed were 'on view 'ready for action'', and schools were commonly 'well resourced in terms of audio-visual equipment' and computer facilities. Now, lots of secondary schools are regularly 'investing in ICT suites and equipments for music' and 'improving their facilities for music provision' in a planned way (DfES, 2005 p.15).

4.2.3.4 Classroom activities

In England's secondary schools, music teachers use music classrooms in a flexible way, and the most common activities are practical activities, especially performing and composing work, which have been highly valued by teachers for helping children develop musically (Tate, 2000). It can be seen that the 'creativity approach' appears to be widely

used in music teaching for secondary students. It is interesting to note that the vast majority of students here expressed a preference for practical ways of learning (Tate, 2000). The opinion of Gardner and Blythe (1990) is that 'hands on' practice is indispensable to successful learning in music.

4.3 Background information of schools

4.3.1 General background information

As explained in the methodology chapter, this study was undertaken in four state secondary schools in London, England (see Section 3.4.4). They are four mixed sex schools, with different specialist status, and situated in different boroughs of London. School A is a Foundation school, whereas the other three converted to academies in February 2012. All of the four schools provide for a diverse community. In each school, the majority of students are from a range of minority ethnic backgrounds, and for more than half of students, English is an additional language. The general characteristics of the four sample schools are summarised in Table 4.3, and more detailed descriptions on the characteristics of each school are provided in the next sections.

4.3.1.1 School A

School A, as a specialist arts college with two specialist statuses, is the only school in its borough to hold seven national awards, including Arts Mark Gold (music, dance, drama and art & design), Arts College Status, Sports Mark Award, Charter Mark, Investors in People, High Performing Specialist School and Healthy School Status, and recently received an upgrade to its International School status, which supports the school in embedding international learning into the curriculum. Due to the progress made by the students between their Key Stage 2 results and GCSEs, the Department of Education (DfE) commended the school and identified it as one of the top five most improved schools in London in 2010 and being in the top 100 most improved schools in the UK in 2013. The head teacher won the 'Secondary School Headteacher of the Year' award at the London and South East Teaching Awards ceremony in 2010.

Table 4.3: General characteristics of the sample schools

	School A	School B	School C	School D
Location	London	London	London	London
School category	Foundation	Academy converter	Academy converter	Academy converter
Specialist status	Visual Arts & Applied learning	Sports	Mathematics & Computing	Foreign languages
Related awards	'Artsmark Gold' 'Healthy School'	'Artsmark' 'Healthy School'	'Artsmark Gold'	'Healthy Travel School'
Recent inspection grades by Ofsted	Good (2011)	Good (2012)	Good (2010)	Outstanding (2012)
Age range of pupils	11-18	11-18	11-18	11-18
Gender of students	Mixed	Mixed	Mixed	Mixed
Number of students	1326 (2013)	1382 (2013)	1968 (2013)	1332 (2013)
Percentage of pupils with SEN statement or on School Action Plus	8.1% (2013)	9.5% (2013)	7.8% (2013)	7.7% (2013)
Percentage of pupils with English not as first language	63.2% (2013)	53.3% (2013)	63.3% (2013)	88.1% (2013)
Percentage of pupils eligible for free school meals	30.4% (2013)	33.1% (2013)	22.0% (2013)	28.8% (2013)
Ethnicity of pupils	The large majority of students are from a wide range of minority ethnic backgrounds.	One third of the students are White British; a large number are from Black African and Indian backgrounds, with smaller numbers from Pakistani and Black Caribbean backgrounds.	The largest single group is of Indian heritage but there are significantly increasing numbers of students from Pakistani, Sri Lankan and Somali backgrounds.	The vast majority of students are from minority ethnic groups, and the largest groups of students are of Indian, Pakistani and Black African heritage.
Teaching content	National Curriculum	National Curriculum	National Curriculum	National Curriculum

All students in School A follow the National Curriculum, and study the National Curriculum Core Subjects and some Foundation subjects. Information and Communication Technology (ICT) and Personal, Social, Health & Religious Education (PSHRE) is taught not only through lessons, but also across the curriculum. Students have the same subject framework, however, the teaching content, its level of difficulty and the approaches employed differ depending on each student's ability and achievement levels. Meanwhile, School A's students are encouraged to take part in visits, trips, and a broad range of extra-curricular clubs and activities in the arts, sports and all the other curriculum areas. Ofsted noted in the inspection reports that 'There is a very good range of curriculum enrichment' in School A.

4.3.1.2 School B

Among all students in School B, the proportion of the students having physical, behavioural, social and emotional needs, as well as learning difficulties relating to language, speech and communication, is higher than the other three sample schools. The percent of pupils who are known to be eligible for free school meals also exceeds the percentage of students in the other three sample schools.

Although as an academy, School B has the right to teach its own curriculum, it still follows the National Curriculum. In order to provide students with more time for GCSE preparation, the only change it makes is that students follow an accelerated 2-year Key Stage 3, rather than 3-year Key Stage 3 that normal secondary schools do. This school provides learning support for students with learning difficulties or who need additional help in their study, Gifted and Talented programme for students, who show particular learning ability, and extra-curricular clubs and activities for students, who express enthusiasm in a certain subject or area. According to the results of Ofsted inspection (Ofsted, 2012), 'the impact of the curriculum on students' outcomes is good' (p.7), and 'the vast majority of students, parents and carers are positive about the quality of the education and care it provides' (p.4). GCSE and A-level results showed that students' achievement had improved year on year. Even though students begin from a low base, most of them make good progress in science, mathematics and English literature,

although English language, is only considered as 'satisfactory' by Ofsted (Ofsted, 2012). In 2013, School B was identified as one of Top 100 Improving School in the UK.

The curriculum in School B features the learning experiences from an 'Additional Learning Day'. Every Year 7 student spends a whole day once a fortnight working in groups on one subject area. As one Year 7 teacher described, 'the kids really enjoy it. (On) Science Day, they were making rockets. (On) English Day, they did a newspaper. That's quite creative. They can do a lot of different stuff. There is something that would be different to their regular lessons.' Sometimes they work on a topic and link the learning from different subject areas together, which could give students a holistic understanding of an issue. Pictures, which were taken on the Additional Learning Days, were selected and pasted on a wall in the school (see Figure 4.1). These pictures show how the themes of some activities were related to the environmental and nature.

Figure 4.1: Students' activities on School B's 'Additional Learning Days'

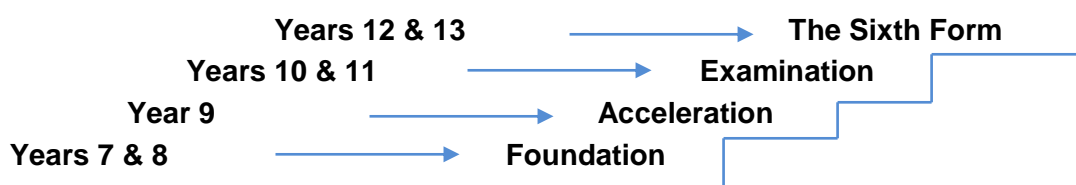


4.3.1.3 School C

School C is a twin-site school and has the largest number of students of the four sampled schools. The main difference in its curriculum from other three schools is the fact that it

partly follows the National Curriculum. The school teaches all the subjects which are required in the National Curriculum, but has made make changes in the general teaching set from 2011. Firstly, the school moved away from using the titles – ‘Key Stage 3’ and ‘Key Stage 4’. Instead, it offers fresher students in Years 7 and 8 an adaptive process over a two year ‘Foundation’ stage, from which they graduate at the end of Year 8. A portfolio is submitted by each of them to show their academic progress, the ability to work in class without disruption, social and citizenship skills, and a good attendance and punctuality, which decide their pathway into Year 9 – the ‘Acceleration’ stage. Figure 4.2 indicates the four stages in School C’s curriculum. Secondly, the school found that the general teaching set has too many different subjects per week for Key Stage 3 students, which cause difficulties for students joining in Year 7 to adapt to this new school. Therefore, a new range of learning experiences for students in Year 7 and 8 was introduced to help these students ease the transition from their primary schools. In each half term, they only need to learn eight different subjects, including english, mathematics, science, personal and physical education, a language, a technology subject, humanities and an arts subject. Students experience the full range of ‘core’ and ‘foundation’ subjects in National Curriculum by rotating through different technology subjects (art and design, computing and design technology), humanities subjects (geography, history and religious studies) and arts based subjects (music, drama and dance) in each half term. In year 7, one teacher teaches all Humanities subjects. According to surveys and focus groups which were carried out by the school, students’ reactions were found to be quite positive to the changes, and they appeared to learn the subjects more intensely. In the music teacher’s opinion, the positive thing is the development of a better acquaintance and a good relationship between students and himself.

Figure 4.2: Four stages during the years of compulsory schooling in School C



Alongside the academic work, the school also has a programme of extra-curricular activities, as what the other three schools carry out. Furthermore, the school's curriculum is enhanced by an all-day activity, known as an 'EXCEL' day, every three weeks. It provides students with a variety of activities, such as fieldwork visits and extended coursework, for the purpose of deepening and extending their learning.

School C seemingly attaches more importance to the development of teachers' teaching ability. All teachers and classroom support staff are members of 'Teacher Learning Communities', from an idea by Wiliam (2011), which aim to enable teachers to learn more about the teaching strategies, such as the assessment of learning, students' differentiation and questioning, and finding out the best ways to facilitate students' progress. Teaching and learning briefings, introduced in 2012, take place each Wednesday morning before students arrive. In addition to these, all teachers and classroom staff are invited to improve their teaching abilities by using the school's on-line 'Teaching for Learning Handbook', which includes a video bank of teaching techniques.

4.3.1.4 School D

As do the other three sample schools, School D follows the National Curriculum, and tries to enrich students' learning through additional learning opportunities. Targeted Intervention Days and 'W Factor', which offers a variety of stimulating activities for students to gain richer insights and experiences, more knowledge and new skills, are two of the innovative programmes in this school. For instance, students learned how to care for reptiles, to debate, to design and make clothes and to write a business plan.

'Learning through arts' has been incorporated in School D's extra-curricular activities. For example, when I last visited the school at the end of July, a four-week Creative Arts Programme for primary school children, who would probably study in School D the following year, was being held in this school. A female staff member with a performing arts background designed and arranged the programme, which aimed to enhance children's literacy and numeracy and develop their creativity, and skills, such as group working and communication, through the different arts disciplines. There were four

projects in the programme: a visual arts project', a music project, a dance project and a theatre Project. Her belief that the arts played a valuable role in students' acquisition of non-musical knowledge and skills and the stimulation of their interests in learning, was the main reason why she organised this.

4.3.2 Music learning at Key Stage 3

This PhD research was undertaken entirely in KS3 music classrooms, in which the project, music teachers planned and taught a new unit on SD, based on the schools' original music curriculum. The location and the focus of this research determine that the contextual information for participating students' music learning at KS3 may be an influential factor on the research findings. From Table 4.4, it can be discovered that all schools have well-equipped classrooms and music facilities for creating an effective music learning environment. Three schools have one music lesson every week, whereas one school, which made some changes in their own curriculum, has three music lessons a week, since music, dance and drama run in turn during each term. In all of these four schools, the classroom teaching content and the assessment criteria are designed according to the National Curriculum. The teaching duration for one lesson is one hour in each school. Appendix 13 provides more details of the four schools' music curriculum.

Table 4.4: Summary of the contextual information on students' music learning

	School A	School B	School C	School D
Related awards	'Artsmark Gold'	'Artsmark'	'Artsmark Gold'	None
Well-equipped classrooms	√	√	√	√
Music facilities	√	√	√	√
Frequency of music lessons	Once per week	Once per week	On rotation with Dance and Drama. Three lessons per week.	Once per week
Teaching content	National Curriculum	National Curriculum	National Curriculum	National Curriculum
Teaching duration	One hour	One hour	One hour	One hour
Students' booklets	√	√	√	None

Assessment	√	√	√	√
Extra-curricular clubs & events	√	√	√	√

4.3.3 ESD in schools

By 2020, the UK government requires all schools to move towards SD and to be a sustainable school (DCSF, 2008b). None of the four sample schools have applied for the 'Sustainable School' Charter Award, and there were no projects named 'sustainable development' or 'education for sustainable development' or any Schemes of Work for specific SD in these schools. Despite this, the evidence shows that all of these schools are working towards SD, and are encouraging and preparing their students to build a sustainable future to varying degrees. Schools A and B have obtained 'Healthy School' status, and School D has applied for a 'Healthy Travel School' award. Moreover, SD has been incorporated into some teaching subjects and the schools' various activities. The SD works that the four schools have done from 2012 to 2013 is summarised in Table 4.5, and these are reviewed in following two sections.

Table 4.5: A summary of schools' works on SD

	School A	School B	School C	School D
Related awards	'Healthy School'	'Healthy School'	None	'Healthy Travel School'
Related subjects	Geography, Science, Art & Personal, Social, Health and Citizenship Education	Geography & Science	Humanities (Geography) Science & Art	Geography, Science & Art and Design Technology
SD activities	'Eco-office', Recycling, Cycling, Healthy lifestyle, Health Fair & Visits	Recycling, Rubbish pick-up day, 'Green Day', Healthy eating & Camping	Recycling, 'Gardening Club', 'Eco-club', 'Model United Nations', Healthy lifestyle, Charity work & Visits	Recycling, Cycling, Healthy lifestyle, Wind turbines, Farm trips, 'SOW Good Garden Project', 'Conservation Area Regeneration', Youth Conference & Charity works

4.3.3.1 An integrated approach of SD through the curriculum

The National Framework for Sustainable Schools, which was established by the UK Government in 2008, suggested an integrated approach for a school's improvement in ESD (DCSF, 2008b). In each sample school, 'sustainable development' has become one part of its curriculum. For Key Stage 3 (KS3), SD is mainly incorporated into subjects of Geography and Science in each school. Geography is considered to be the most crucial subject for children's understandings of the world. It seeks to engender children's awareness of the challenges that the planet faces and preparedness for an active citizen's role in a changing world. A number of important SD issues, such as 'Extreme Environments', 'Pollution', 'Sustainable Cities', 'Crime', 'World Population', 'Climate Change', 'Wind Energy', 'Eco-system', 'Consuming' and 'Local Environment', are selected by the four schools to be involved in each KS3 Geography unit teaching. Although each school has different teaching content for each unit or term, all of them follow the National Curriculum and have very similar teaching topics for KS3 students in Geography lessons, as well as in Science lessons. Science also covers some of the issues about our planet, for example, 'Climate Change', 'Global Warming' and 'Ecology', and investigates how things work, such as 'Sustainable Energy', 'Solar System' and 'Generating Electricity from Wind Power'. In School A, 'Fitness and Health' is another related topic which KS3 students can learn in Science, and the students in School C need to consider the consequences of human activity on the Earth and possible solutions to a nonviable habitat.

Apart from the Geography and Science subjects, PSHCE in School A, Art in School A and C and ADT in School D, are also linked with SD in their lessons. Firstly, how to become caring individuals and responsible citizens are the main learning goals in School A's Personal, Social, Health and Citizenship Education (PSHCE) lessons. PSHCE, which focuses on the students' health and social well being, as well as on the local and international community, is designed to empower students to make healthy and safe lifestyle choices, develop positive relationships with others and play an effective role in public life. However, the teacher who was responsible for the PSHCE course pointed out that because it is not an assessment subject and is offered to children once every two

weeks, teachers and students pay less attention to the subject. Moreover, students in School A and C collected and used recycled materials to create art works. The department of Art and Design and Technology (ADT) in School D brought 'Climate Change' into its curriculum. Figure 4.3 below shows the selected works of students on SD, including eco-system drawings from School B, geography cartoons from School C, an art work made by recycled materials from School A, and the process of making models of wind turbine in School D.

Figure 4.3: Students' selected works on SD



4.3.3.2 An integrated approach of SD through activities

Sustainable development is not only integrated in schools' teaching provision and learning, but also integrated in different activities school wide. All four schools encourage all students and staff to recycle, and regardless of whether it is a 'Healthy School' or not, all schools make efforts to promote healthy eating in the school setting. Because of the diversity of activities and the mode of operation in each school, the schools' SD-related activities are explored and discussed respectively in Appendix 14.

4.4 Background information of music teachers

All participating music teachers in this study are male, and have different music specialism and different levels of teaching experience, as well as experiences on cross-curriculum work. They were familiar with the National Curriculum and were able to speak knowledgeably about its overall requirements as well as their own curriculum. All of them taught the full range of secondary music courses offered in England, with an interest in SD issues. As teachers' personal interests and past experience, may have an influence on their perceptions and classroom teaching (Altun, 2005), the four music teachers' background information obtained from the informal discussions, the pre-teaching interviews and observations, is presented in this section. Individual teachers' personal and professional characteristics are summarised in the personal profile for each of them in Table 4.6. In the thesis, the music teachers have been anonymised, and pseudonyms are used in place of their true names.

Table 4.6: A brief summary of the music teachers' background information

	School A	School B	School C	School D
Pseudonym	Mr. Campbell	Mr. Wilson	Mr. Davis	Mr. Morsi
Gender	Male	Male	Male	Male
Age	Around 40	30-40	30-40	Around 30
Ethnicity	Northern Irish	British	British	Pakistani
Specialism	Guitar	Drums	Saxophone; Music Technology	Music Technology
Teaching Experience	16 years (2013)	6 years (2013)	8 years (2013)	2 years (2013)

Experiences on cross-curriculum	Drama, Dance & History	Nations; Technology; Culture and understanding of the worlds	Languages; Maths	None
Concept of SD	Not fully aware of this	Knew the idea, but did not know the name	Fully knew the concept	Did not know it
Interested SD topics	Carbon footprint	Sustainable power; Pollution in land field & Recycling	Conservation of animals; Sustainable consumption; Renewable source	Environment; Climate change
SD behaviours	Recycling; Teaching children to save water and electricity	Recycling; Sustainable travel	Sustainable consumption & travel; Recycling; Animal conservation	Recycling

4.4.1 School A's music teacher

Mr. Campbell is the Head of Music in School A. He has been teaching for 16 years or more. He worked in an all boys school in Northern Ireland for two years before moving to London to teach in a mixed secondary school. The school year 2012-2013 was his fourth year in School A. Before teaching, Mr. Campbell composed music and performed in different bands, so when he became a teacher, he tried to bring the two things into his classrooms. However, he thought that the two activities were difficult to carry out with the present size of music classes, of about 30 students. In his music lessons, he says he tries to be positive and humorous, and to make the students' music learning practical. He likes technology and composition, so he uses the recording studio and tries to embrace new teaching practices as much as he can. Audio and visual resources are frequently employed in the classroom as stimulus to enable students to get messages quicker and better. Mr. Campbell connected the music classroom teaching with drama, dance and history before the teaching intervention. For example, in black history month, he co-taught the history of 'the blues' with the history department and looked at music before 1800 in Central America. However, this cross-curriculum work was not evaluated,

although, as Mr. Campbell explained, most students agreed that it was a good idea to learn a same thing not only within one classroom but between different classrooms.

Mr. Campbell heard the term 'Sustainable Development' from media, such as TV, internet or documentaries, before the research, and he was only aware of the citizenship programme in which students might cover some units on environment and wellbeing. The carbon footprint was the topic on SD that he was most interested in, and had already thought about how it could link with music; for instance, making events and concerts about carbon, nature and energy. Mr. Campbell recycles at home, and also encouraged his parents to recycle.

4.4.2 School B's music teacher

Mr. Wilson is the Head of Music in School B, and at the same time, he works as one of the school governors. By September 2013, Mr. Wilson had taught in School B for six years. Before that, he played drums in bands for three years. In his music lessons, he tries to 'make it as practical as possible, as much of the time as possible'. Students are combined in different ways in the lessons, so sometimes they work in groups, sometimes in pairs, and sometimes individually. As a member of the school improvement group, Mr. Wilson says that he always tries to use and research new techniques in his classrooms, and to disseminate these across the whole school, which might be one of reasons for joining in the present research. Moreover, cross-curriculum work has been carried out in School B. Five years ago, in order to provide a more accessible curriculum for the new students, the entire Year 7 Curriculum was replanned, and links were made between different subject areas. For instance, in music lessons, students focused on the culture, diversity and understanding the world throughout one term, and technology was also occasionally linked with music learning. The music teacher teaches music from many nations and cultures, for example, according to his Scheme of Work, he teaches music from Africa and from Greece.

Although Mr. Wilson is interested in related issues, he did not realise they came under 'Sustainable Development'. He is very aware of sustainable power, non-sustainable fuel and recycling, as well as soil and agricultural pollutions. His family tries to live 'in the green way, as green as possible', for example, they recycle everything and walk instead of driving where feasible.

4.4.3 School C's music teacher

Mr. Davis was born in London, and moved to Cornwall when he was eleven years old. He played saxophone in bands and an orchestra in Cornwall before returning to London to pursue a Bachelors degree in music technology, during which time he learned music production and sound recording. After graduating, he taught in a college in London for three years, and then set up a sound recording company, working for a bank, and playing bands, all at the same time. In 2008, he re-entered the teaching profession as a music teacher in secondary schools. After gaining his PGCE and working in two secondary schools, he came to School C in 2012 as Head of Music. Apart from the training opportunities provided by School C, Mr. Davis participates in a training course outside the school in connection with secondary school music teachers' classroom teaching, and has obtained an MA degree in music.

By observing the non-intervention lessons, I discovered that the teaching strategies the School C's music teacher employs in his music lessons are diverse. By making things as practical as possible, he teaches through games, for the purpose of making the learning content more memorable for students. Year 7 students have learned about the elements of music, including pitch, tempo and dynamics, through games, and the data obtained through observing showed that they seemed to quite enjoy and to be fully involved in these games. Moreover, the teacher gets students to demonstrate and teach things on occasion, an approach also used in Mr. Wilson's Year 8 music lessons in School B. Mr. Davis believes that this method is more effective than him doing everything sometimes.

Mr. Davis worked with the English department on cross-curricular projects with English, including a project with Year 8 students, who composed music with their own English stories. In this programme, students learned the composition skills and how to create an appropriate mood to match what they had written in the story. In the daily music lessons, he sometimes used math skills to work out problems on music notes, for example, two plus two is four, and the four is semi-breve. Although cross-curricular works have not yet been evaluated,

'They seemed to enjoy it. Er...I think the story was effective. Because without the story, they would found (it was) quite hard to come up with ideas for their music.....and I think using the music maths model, when they have the different notes, I think that helps them try to, that helps them learn what the notes are.....It's linking the number with the symbol, so I think that helped.'

Mr. Davis knew and understood the concept of 'sustainable development' before I met him. He had learned a lot about ecology and environment issues from a friend, who works in an ecology company. The topic that he was most interested in was animal conservation. He was a member of the Whales and Dolphin Conservation Society, and he worked part-time in Bristol on habitat sustainability. He had been a vegetarian for 10 years, as he 'did not know where it (the meat or fish) came from and how it got there (the shops). I felt bad'. He now only buys line-caught fish, which is more sustainable than net caught. At the same time, he is also quite interested in the environment and worries about the future. For example, Mr. Davis bought a fuel efficient car last year, and tries to buy products made from recycled paper, and local food without too much packaging. He and his family try to recycle everything; and to avoid polluting the atmosphere, they walk or cycle when possible.

4.4.4 School D's music teacher

Mr. Morsi is the Head of Music in his school. He came from Pakistan to London with his parents when he was two years old. He plays rhythm guitar and drums, and was awarded a Bachelor degree in Music Technology. At first, he worked for a record company to train other people in music and technology, but later opted for teaching. He participated in the Graduate Teacher Programme (GTP) and gained a teaching qualification before being

employed by School D as a music teacher. In his normal lessons, audio, visual and kinesthetic teaching strategies are used based on the students' learning styles. In the music classroom, the students sit on the floor in a circle most of the time, whereas the students in other sample schools' music classrooms sit on chairs. As he interpreted, 'it is more of behaviour strategy rather than the learning strategy for them', and it facilitates good behaviour of students and 'gives them easy access to get upon do some music activities'. There were no cross-curriculum projects Mr. Morsi had done.

Mr. Morsi did not know the concept of 'sustainable development' before joining in the research, but when I introduced the term to him, he thought it was a quite interesting concept. Among a lot of issues in connection with SD, he was more concerned about the environment as well as the climate change, which was the main reason why he was doing some recycling at home.

4.5 Background information of students

Information on students, such as their ethnicity, family background, musical and language abilities, and the characteristics of their classes, which may influence the research results, is indispensable for analysing the research data. In this section, the participating students' background information, which was obtained from informal discussions with students and music teachers, students' questionnaire responses, interviews with music teachers and observations, is investigated. The general characteristics of the four classes have been summarised in Table 4.7, and the data on other aspects of their background information is presented.

The sampled classes were selected by the music teachers. Since this research had been planned to be carried out with KS3 students, each music teacher chose one class from year groups at KS3 according to their music curriculum. After music teachers' individual deliberation, Year 7's curriculum in each school at that time was considered to be the most appropriate to be integrated with SD, although most of them thought teaching SD to the students in higher year groups would be more effective on account of these students'

better ability of understanding. Take for instance, the case in School B. Mr. Wilson illustrated the reason that 'Year 7 is generally more open to try different things and do different kinds of things'. The number of students in each school's sampled classes was no more than thirty. A small number of students in School A and B were white British, and there was no white British student in the other two schools. None of the students knew what SD was before the teaching intervention, even though some of them had heard the phrase.

Table 4.7: The general characteristics of the participating classes

	School A	School B	School C	School D
Year group	7	7	7	7
No. of students	29	27	24	28
No. of boys	16	12	13	15
No. of girls	13	15	11	13
Ethnicity	British, Polish, Spanish, Indian, Pakistani, Dutch, Moroccan, Irish, German & Algerian.	British, Somali, Jamaican, Pakistani, Nepalese & Albanian.	Kenyan, Italian, American Iraqi, Afghans, Irish, Egyptian, Algerian & Jamaican.	Kenyan, African, Portuguese, Pakistani, Dutch, Lithuanian, Eritrean, Somali & Polish.

4.5.1 School A's students

The participating students in School A had extremely mixed levels of music and English language. When I met the students for the first time, they were new to the school with only 7 weeks of learning, so most of them had not really grasped much musical knowledge and practical skills at that time. These students came from different primary schools and had different musical and learning abilities. As their music teacher said, there was 'a vast range' and 'a very wide spectrum' of their music ability. A small number of them played musical instruments and have taken some musical grade exams, whilst most had never taken part in any music training. Some students had inadequate English proficiency, and there was one student who had just started to learn English and could only speak some simple English words.

Although no student knew the meaning of SD, the results of students' questionnaires showed that 62.5 percent of students were conscious of the necessity to learn issues on environment and climate change. In their daily life, most parents encouraged them to care for the environment. Some parents recycled at home, and some of them reminded their children to turn the TV, light and computer off. One boy said his mother never allowed him to take the car for protecting the earth. In the class, more than half of students appreciated Mr. Campbell's music lessons, as he made the lessons fun for them, and enabled them to learn a lot through different activities, such as playing different kinds of instruments.

4.5.2 School B's students

In School B, the students in Year 7 were streamed into different classes in accordance with their academic achievement. There were nine classes in Year 7, and the class chosen by the music teacher for the research ranked 3rd, which was at the bottom of the top group. Mr. Wilson chose the relatively small size of this class for the better chance of organising classroom activities. In addition to this, these students were motivated and showed interest in music.

In this class, many students came from socially deprived backgrounds, and a number of them were from single-parent families. There were a lot of students who speak English as the second language, and their first languages are different. Of the 240 students in the whole of Year 7, only one or two of them had private instrumental lessons before they entered the school. In this class, it seemed that no students had done any music training in their primary school. The great majority of students liked music lessons, because it was interesting to learn 'amazing' songs and play keyboards, which they cannot do at home. Some parents encouraged them to be aware of the environment, and according to the data from questionnaires, 72 percent of students were aware of the importance of learning environmental issues in the school.

4.5.3 School C's students

The participating students in School C also came from a variety of countries, and there were no white British students in this class. The majority of students' English was good, although a small number of them attended a special class to improve their English. The students in this class appeared to have limited practical skills in music. One boy, who had been diagnosed with Autism and ADHD (Attention Deficit Hyperactivity Disorder), always interrupted the classroom activities which encouraged several other students to behave in a disruptive way in both the normal and intervention music lessons. Before I arrived, this class was taught by a student teacher, so Mr. Davis did not fully know their performance ability when he selected it. However, the students expressed good opinions of the music lesson, with the word – 'fun' frequently appearing in their comments. They preferred playing different instruments, watching videos and learning interactively in music lessons in comparison with the 'boring' tests and writing in other lessons. The percent of students who realised the necessity to learn issues around the 'Earth' before teaching intervention is 78 percent, which is higher than the other three schools.

4.5.4 School D's students

When I walked around School D, the majority of students I saw were of South Asian heritage. It was same in the sample class, but a few students also came from the traveller site next to the school. According to Mr. Morsi's description, the majority of participating students were from the lower-middle class, and very few of them came from affluent backgrounds. In School D, there was no streamed division in Year 7 so all classes were similar.

In terms of students' music ability, when they started in Year 7, the majority of them did not have a good understanding and grasp of music. They came from primary schools, which provided students with the minimum amount of music teaching, half an hour a week. Moreover, the music lessons in the primary schools were initially delivered by non-specialist teaching staff, which was another factor in students' musical achievement. Due to the students' low income backgrounds, their parents' passive attitude toward their

music learning, as pointed out by Mr. Morsi, and the music education they received in their primary schools, there were few students within the whole year group who played an instrument when they entered the school. As with students in the other schools, most of students in School D also noted positive feelings towards the normal music lessons, as demonstrated by the questionnaire responses. They liked the practical classroom activities and liked to learn about bands, musicians, genres of music and the music elements. In addition, 46 percent of all students in the class considered that it was necessary to learn about the 'Earth'.

4.6 Summary

The context in which teaching and learning in the sample schools take place illustrates that music, as a form of the arts, takes its place as a foundation subject in the National Curriculum for KS3, and the three aspects of music, of listening and appraising, composing and performing, comprise the music curriculum. The examination of the four schools, where this study took place, and the four music teachers and four classes of students, who participated in the study, enables an understanding of the characteristics of the research place, the different profiles of each teacher and class of students, and the conditions for carrying out the teaching intervention. This background is likely to influence the designing and implementation of the teaching intervention as well as the subsequent feelings and perspectives of participants. As a result, it is necessary to do cross-comparisons between schools and participants that 'may help to draw more reliable and valid conclusions from the findings as a whole' (Altun, 2005 p.138).

As can be seen from this chapter, the four secondary schools, from across London, follow the National Curriculum. Among these schools, School D had highest percent of students with English not as first language and was the only school that did not hold an 'Artsmark' awards, although, it was also the only school which was graded as 'outstanding' by Ofsted in recent years. All schools had integrated SD into subjects, such as geography and science, and some whole school activities. For example, the students in each of these schools were encouraged to recycle, have healthy lifestyles and care

about environment. Most of the participants apparently had not grasped much musical knowledge and practical skills before Year 7. However, the great majority of them expressed their love for the learning in music lessons, especially the participation in practical activities. All participating music teachers are male, and the music teacher in School A is more experienced in music teaching than the other three teachers. Although most teachers were not familiar with the concept of SD before research, all of them recycle in their daily lives, and the music teachers in Schools A, B and C already had preliminary knowledge, skills and experiences of cross-curricular work, which might be helpful in the design of the current teaching intervention. Accordingly, it is important to examine each teacher's teaching strategies for music-SD lessons and compare the classroom practices to evaluate the various pedagogic approaches. This data will be analysed and presented in the next chapter.

Chapter 5 Data Analysis and Discussion – teaching strategies and participants’ interactions within the music-SD lessons

RESEARCH QUESTION 1

1. What is the feasibility of stimulating young people to make changes for a sustainable future through music learning and teaching?

a) In what ways are the conceptual dimensions of sustainable development translated into music classroom teaching? Which teaching strategies can be employed?

b) What are the participants’ (both students and teachers) actions and interactions within the music lessons? How do they respond to the lessons in an emotional way?

5.1 Introduction

This chapter seeks to answer Research Question 1. For identifying the practicability and usefulness of offering opportunities to develop a range of SD-related learning in music classrooms, the chapter analyses the music-SD lessons in the four sample schools, and aims to critically reflect on the teaching and learning processes. An evidential and reflective approach is employed to examine what occurred within the experimental setting of the lessons and participants’ responses to those lessons. The chapter is divided into two sections. Two sets of data relating to the music-SD lessons are presented to focus onto sub-questions 1a and 1b respectively.

Evidence for sub-question 1a, how music educators support secondary students’ SD learning through adapting different teaching strategies is discussed in Section 5.2, which describes what took place during the phase of lesson planning (5.2.1). The teaching methods and strategies that contributed to students’ learning, especially to their learning of SD, were analysed and are further discussed in the next section – 5.2.2. The analysis in both sub-sections provides an overview of the different ways of the integration of ESD

and students' music classroom learning in each school, and explores the variety of pedagogical techniques involved in the integrative learning experiences.

Section 5.3, which seeks to answer Question 1b, moves the research forward by examining the interactions of the participants and their responsive actions and dialogues within the music-SD lessons, which further exemplify the links between students' classroom learning and SD learning that occurred in the music lessons. This section has been broken down into four sub-themes: teacher-student interaction, student-student interaction, student-lesson interaction and teacher-lesson interaction. More specifically, the children's relationships with each other are explored in the second sub-section, while the first focuses on the role of the music teacher within the lessons, examining the teachers' linguistic and behavioural strategies for communication with children. Finally how these children and music teachers respond to the lessons is discussed in the next two sub-sections.

This chapter, which provides examples of the incorporation of SD in the secondary music curriculum, aims to make a contribution to pedagogical knowledge by presenting, analysing and discussing data systematically. Simultaneously, a number of pictures and original voices of participants were used as evidence to illustrate the discussions with first-hand commentaries, as well as support some claims, for instance, how the arts can support children's learning in SD (UNESCO, 2005c).

5.2 The design and implementation of music-SD lessons

Teaching, with its aesthetic, creative, heuristic, indeterminate and dynamic nature, is viewed not only as a vocation or a profession, but also as an art by a number of educators (e.g. Callaway, 2000 & Eisner, 1985) mainly in an Anglo-American context. Meanwhile, teachers are viewed as artists (Lutzker, 2012), and their capacities for making appropriate choices in classroom teaching are seen as a crucial and common element in each of the aspects of the process of teaching by Elliot Eisner (1985), one of the most noted proponents of developing artistry in teaching. As Struthers (1994)

elucidated, the selection and adoption of pedagogy has direct consequences for learners and their achievement.

The teaching interventions which took place in this project provided music teachers with an opportunity to develop at three levels: their understanding of SD issues connected with music; an awareness of the range of pedagogic possibilities of embedding SD within their own music teaching; and their ability to plan lessons for students' progression. Four music teachers worked individually to prepare and undertake a teaching plan based on their understanding of the National Curriculum (NC) and the concept of SD whilst responding to the project's requirement of fitting SD within their own schools' music curriculum. Teachers' different interests, understandings, expertise and experiences led to different contents and styles of music-SD teaching in the four music classrooms. How SD can be integrated with subject-based learning is examined in this section. Since this chapter separates the investigation of the music teachers' pedagogy and the participants' interactions within the lessons, how students responded to the learning activities verbally or physically can be found in the next sections, particularly in Section 5.3.3.

5.2.1 The process of planning

In order for teachers to be more effective, teaching has to be planned (Cohen et al., 2010), for which the teaching content and styles have to be decided in advance (Altun, 2005). Although 'the strict implementation of preconceived plans' is not recommended in view of 'the shifting, unpredictable dynamics of a classroom situation' (Lutzker, 2012 p.53), planning for music lessons is still considered to be an important and indispensable part of effective teaching, as it enables teachers to 'formulate objectives, prepare the resources and materials to structure learning through a planned sequence of activities' (Philpott, 2001 p. 83). As the National Curriculum does not determine teaching methods, music teachers have to make professional judgments to choose the most appropriate and efficient ways of integration and teaching.

Teaching, as ‘a thoughtful activity’ (Altun, 2005 p. 46), should be underpinned by the combination of subject matter knowledge and skills (Croll & Hastings, 1996). In this research, all of the participating music teachers had a bachelor or higher degree in music and had between two and sixteen years’ teaching experience in schools, as clarified in Chapter 4. However, three of the four teachers had no knowledge of the concept of ‘sustainable development’ beforehand and had very limited knowledge on SD-related issues and teaching methods for cross-curricular lessons. Garnett and Allum’s (2011 p.6) research on music education and global citizenship suggested that if SD is planned to be an integral part of students’ musical learning, the teachers’ ‘subject knowledge and their understanding of what it means to teach music’ should be developed first, which facilitates the music teachers’ deep engagement with SD. To compensate for this, as mentioned in Chapter 3, preparation time was offered to the teachers from Schools A, B and D to develop their SD and cross-curricular knowledge. From my first conversations with them, I realized that once they received my first email, they began to research the meaning of SD and to try to understand the concept and get ideas for the approaches for integration. As Mr. Wilson from School B described,

‘I sought them from the internet. Just google. I can’t remember what websites now, sorry. I just typed ‘sustainable development’, what came up, I just chose to read.’

(I: How much knowledge about sustainable development was found from internet?)

‘Pretty much.’

Mr. Morsi from School D only visited the websites that he thought were ‘the best or the most reliable sources’, such as ‘Defra’ (the Department for Environment, Food and Rural Affairs). The majority of information on SD and a variety of resources Mr. Morsi used in his lessons was taken from Defra’s website. The three teachers, without prior knowledge of SD, found no difficulty in understanding the meaning of SD, even though they agreed that the concept was a little complex.

The four music teachers planned their lessons in different ways. Mr. Campbell (School A) Mr. Davis (School C) planned all lessons before the start of the teaching intervention,

whereas Mr. Wilson (School B) and Mr. Morsi (School D) planned each lesson separately. Table 5.1 summarises the planning that the four music teachers completed according to Kyriacou's (2007) four elements.

Table 5.1: A summary of music teachers' planning works

	Mr. Campbell (School A)	Mr. Wilson (School B)	Mr. Davis (School C)	Mr. Morsi (School D)
Learning objectives	<i>Booklet, PPT</i>	<i>TP, PPT</i>	<i>TP, PPT, work sheet</i>	<i>PPT</i>
A script of a lesson (class activities)	<i>Booklet, PPT</i>	<i>TP, PPT</i>	<i>TP, PPT</i>	<i>PPT</i>
A preparation of all the props	√	√	√	√
Assessment	<i>Booklet, PPT</i>	<i>TP, PPT</i>	<i>TP, PPT</i>	<i>PPT</i>

Note: 'TP' – 'Teaching Plan'.

Due to the participating music teachers' lack of experiences of cross-curricular teaching and their subject knowledge on SD, all of them faced challenges in the process of planning, especially at the beginning. According to their accounts in the pre-teaching interview, it was clear that while the planning work for them was not difficult, they racked their brains for methods to integrate their own music curriculum and the issues of SD.

Mr. Davis (School C): *'Er, (I) was trying to work out how I was going to link music and sustainability, into the (scheduled) topic. Er, the challenge was, when I started it, what I wanted to do is link (SD) with cartoon music, but I can't find the resources. I tried to find the cartoon about sustainability, which I could embed in. That was one reason why I took 3 hours, cause (because) I can't find anything. Er, once I found resources, it wasn't difficult.....Er, coming up with a plenary is quite hard sometimes, and trying to find creative ways to assess what they've learned can be difficult.'*

Mr. Morsi (School D): *'I think the main challenge was the fact that it wasn't music generally. Er, I don't know anything about (SD) that was the main challenge. You know, I have got no experience in it. But I had all the resources that you sent, and it gave me some guidance as to what to do. And I thought ok, it might not be so difficult, let me try it. Er, just in a way that the students will be able to learn and access the content of the lesson.'*

Although the planning for the teaching intervention posed a number of challenges and difficulties to all four teachers, none of them showed any negative emotions during our

discussions on this topic. Mr. Wilson in School B was enthusiastic for planning the music-SD lessons and stated that ‘I really enjoy planning, to be honest, all the things. I love teaching, especially when I come up with new ideas.’

5.2.2 The teaching methods and strategies

There are a number of similarities and differences among the four sample schools. Moreover, the similarities and differences in their music-SD lessons are made clear in the section. In each school, each lesson was one hour. Table 5.2, which summarises the teaching methods used, shows that there are both similarities and differences across all categories. The methods of linking students’ SD learning and music learning in each school have also been indicated in Table 5.2.

Table 5.2 The summative data on the teaching methods and strategies employed in all sample schools’ music-SD lessons

	School A	School B	School C	School D
Lesson No.	7	6	6	6
Main Tasks	<ul style="list-style-type: none"> • Singing a SD rap • Composing a SD rap 	<ul style="list-style-type: none"> • Composing two pieces of music on SD 	<ul style="list-style-type: none"> • Composing a rap or a song on SD 	<ul style="list-style-type: none"> • Making junk instruments • Composing rhythms for junk band performance
Music Activities	<ul style="list-style-type: none"> • Listening • Watching • Singing • Composing • Performing • Discussing 	<ul style="list-style-type: none"> • Listening • Composing • Performing • Discussing 	<ul style="list-style-type: none"> • Listening • Watching • Composing • Performing • Singing • Discussing 	<ul style="list-style-type: none"> • Listening • Watching • Making music instruments • Composing • Performing • Discussing
SD Activities	<ul style="list-style-type: none"> • Watching video • Looking at pictures • Discussing • Brainstorming • Reading lyrics • Writing lyrics 	<ul style="list-style-type: none"> • Looking at pictures • Discussing • Brainstorming • Paper work • Card sorting 	<ul style="list-style-type: none"> • Watching video • Discussing • Brainstorming • Writing lyrics • ‘Exit Ticket’ 	<ul style="list-style-type: none"> • Watching • Discussing • Reading texts • Recycling and using
SD Issues	<ul style="list-style-type: none"> • SD meaning • 3 aspects of SD 	<ul style="list-style-type: none"> • SD meaning • The destruction of habitat and 	<ul style="list-style-type: none"> • SD meaning • Renewable energy 	<ul style="list-style-type: none"> • SD meaning • 3 aspects of SD

	<ul style="list-style-type: none"> • Pollution • Nature • Flooding • Global warming • Disaster • Animals • Consuming • '3Rs' (Reduce, Reuse, Recycle) • Equality • Poverty • Water • Energy 	<ul style="list-style-type: none"> landscape • Global warming • Ecological footprint • Energy • '3Rs' • Water • Reforestation • Environment • Pollution • Walk don't drive • Animals 	<ul style="list-style-type: none"> • Unsustainable problems (Global warming, Environmental and Traffic problem, etc.) • Natural resources 	<ul style="list-style-type: none"> • SD indicators • '3Rs' • Air pollution • Climate change • Environment • Renewable energy • Economic sustainability • Social development
Teaching Strategies	<ul style="list-style-type: none"> • Direct instruction • Explaining • Demonstration • Practising • Group competitions • Q&A 	<ul style="list-style-type: none"> • Direct instruction • Explaining • Demonstration • Practising • Q&A • SD game 	<ul style="list-style-type: none"> • Direct instruction • Explaining • Demonstration • Practising • Q&A • SD game 	<ul style="list-style-type: none"> • Direct instruction • Explaining • Demonstration • Practising • Group competitions • Q&A
Student Organisation	Whole class, group, pair, individual	Whole class, pair, individual	Whole class, pair, individual	Whole class, group, individual
Assessment Strategies	<ul style="list-style-type: none"> • Performing • Recording • Evaluation sheet • Individual, peer and teacher's evaluations 	<ul style="list-style-type: none"> • Performing • A quiz sheet • Peer and teacher's evaluations 	<ul style="list-style-type: none"> • Performing • Teacher's evaluation 	<ul style="list-style-type: none"> • Performing • Q&A • Peer and teacher's evaluations

5.2.2.1 The method of interdisciplinary connection

It can be seen from the 'Main Tasks' in Table 5.2 that song/rap writing and melodic composition, which are both considered as 'the art of letting go' and a way of helping children 'question, protest, celebrate and even grieve about events they hear about' (Garrison, n.d. p.24), was employed by Schools A, B and C to connect to SD, but the specific teaching approach to it was totally different in each school. Apart from this, singing a song or rap in relation to SD also occurred in Schools A and C's music classrooms. Teaching singing was part of a process which prioritises listening, composing and performing in schools' music classrooms (Philpott, 2001), and its

significance in real musical circumstances is emphasized by Philpott (2001). In School D, students were inspired to tackle the issues of consumption and waste, through recycling and reusing reclaimed materials as art materials and then transforming them into musical instruments. The activities of improvising rhythms were set up in almost each lesson for embodying the practicability of these instruments.

The overall aims of the music-SD unit and the learning objectives of each lesson, which was set by the music teachers and presented in their teaching plans, PowerPoint and students' work booklets, are summarised in Appendix 15. In order to present a clear overview of the design of the music-SD lessons, all lesson activities are noted briefly and arranged in the order of their occurrence. Additionally, different colours are used to highlight and distinguish the activities undertaken for different learning content: activities for SD learning, activities for music learning and the integrative activities for both music and SD learning. Brief discussions of the different interdisciplinary approaches that employed by the four music teachers and what occurred in their lessons are provided in the following paragraphs.

5.2.2.1.1 School A

In School A's music classroom, six and a half lessons were included in the unit – 'Sustainable Development Campaign'. The 'rap', which was regarded as a 'platform upon which you can write lyrics and perform them easily' by Mr. Campbell, was employed in this project to connect SD with his music classroom teaching. For Mr. Campbell, although the topic on SD is very interesting, the integrative work was challenging at the beginning. As he stated, 'as a stand-alone, it (SD) is hard to integrate, you know, into normal music work'. Meanwhile, he felt that modern songs or raps are good focus points for students to look at, since they could get the message better through the content of lyrics. He explained that:

'Teaching is great difficulty. But I think some of the kids are used to listen to the popular music, so that's why we actually should concentrate on that. Because some of them are unfamiliar with (SD), introducing new concepts through a musical style they are familiar with, seeming to be a clever way to move forward.'

In Mr. Campbell's lessons, integrated learning activities occupied the most of lessons' time. Students learned to sing, perform and compose SD raps, as well as to understand the issues of SD through various pathways. The teaching-intervention programme was carried out in School A in the end of the autumn term. Before this, no students had been offered any opportunities to learn rap, and very few of them heard of the concept of SD. To maximise students' learning, approximately half of the first two lessons was focused on SD learning, and the teacher selected some words, phrases and sentences, which he considered to be the key SD ideas. He organised these as lyrics and composed a rap called 'Together We Can' (see Table 5.3).

Table 5.3: The lyrics of Mr. Campbell's rap – 'Together We Can'

Intro	Freedom; Equality; Solidarity; Tolerance; Respect for Nature; Shared responsibility – these are the values that world leaders consider essential for the long-term survival of our planet and the human race.
Verse 1	We have the power of human words, we have the knowledge to think and plan, We have inventive minds and skilful hands, we dream as only humans can, We have to choose the path to take, and understand the power we hold, It's amazing the difference we could make, yes you can change the world.
Chorus 1	Live each day, help this place survive; Think and act to keep this world alive; Girl, boy every woman and man, do what you must cos' together we can. (X2)
Link 1	Together we can... Just stick to the plan. (X2)
Verse 2	Fish stocks crash in polluted seas, drought destroys the crops and trees. While people work like busy bees, food prices bring them to their knees. Temperatures rise, water disappears now can our world survive? And can the children of the world keep their dreams alive?
Chorus 2	As Chorus 1
Link 2	So what do you think, can we do it?
Chorus 3&4	Group 1: As Chorus 1 Group 2: Together we can

Students learned this rap, practiced it and performed it in three ways: At first, all students performed the rap together, next, the whole rap was divided into sixteen parts by Mr. Campbell and sung by different students, which meant that they still performed as a group but the solo parts were integrated to challenge everyone. Finally the students

formed three groups, and rehearsed and performed the rap in their own ways. The second learning task was to compose their own SD raps in pairs or in small groups. With the guidance and advice of the music teacher, all students wrote lyrics to promote the basic principles of sustainable development, created a bass line and melodic riff on the keyboards for their own raps, and then performed them throughout the next half of unit. In terms of students' learning about SD, Mr. Campbell expressed that 'I think I was definitely opening the possibilities and integrating sustainable development into lessons'.

5.2.2.1.2 School B

Mr. Wilson's music classroom commenced his lessons for making students' aware of their 'personal responsibility' and 'of the basic idea of sustainable development and of the idea of what they are doing now and what will have an effect in ten and fifteen years time' (Mr. Wilson). Composition was employed using visual stimuli to link the two main aims with students' music learning. As a result, 'the core is combining the different sounds to make something creative to move a motion dealing with environmental problems. That's the kind of thing I'm looking for.', he added. Mr. Wilson elaborated on his experience of deciding the integrated teaching method:

'When I did some research, you can't realize it's a huge topic. There are so many different things you can kind of pick up. What I want to try to do was to find the approach in the Year 7s that the students could kind of understand, could get involved with.....What I find with Year 7s, most of the time they actually take to composition very well, they like writing music.....I looked at the various resources that you gave me, and I came up with ideas on that. Er, I liked the idea of linking the changes in the world and the changes that we could make potentially with composition.....I thought that fitted in really well with the idea of different sections of composition.'

In School B, two composition tasks were assigned to students in the unit of SD. All participating students should 'soundtrack' two pairs of SD-related pictures (see Figures 5.1 & 5.2) and create their own music on the keyboards and computers respectively. Most students worked in pairs, although three chose to practice alone. The first three lessons were devoted to composing two minute long pieces of music. The two pictures reflect a change in the landscape, which was expected to stimulate students' composition.

In the next three lessons, for the second task, students needed to ‘soundtrack’ the pictures of rainforest (see Figure 5.2) on computers and then record their compositions onto the computers. This enabled Mr. Wilson’s teaching of composition to get into more depth in terms of the musical structure. The ternary form, which is usually schematized as A-B-A, was suggested to be used in students’ composition works. Mr. Wilson expounded the reason for the introduction of the theory of musical structure that,

‘We are going to use that (ternary structure – A-B-A) to reflect on what they should be like, what we change it to, and if we do the other things, can we go back to this? So we have the A-B-A, A will be the beautiful place, B will be the place potentially be destroyed, and then return to A. We will hopefully achieve this when we start properly living sustainably in doing what we should be doing. So that’s pretty much the theory thing. That could happen hopefully.’

Meanwhile, in order to enable students ‘soundtrack’ the pictures effectively, a set of basic musical tools, including ostinato, drone and scales, were introduced to them. For different pictures, two different musical scales – pentatonic and minor, were provided, so as to ‘help them to begin to understand how they can use different scales to kind of create different emotions and different feelings’, explained by Mr. Wilson.

Figure 5.1: The pictures of ‘Before Man’ and ‘After Man’ for the first composition task



Figure 5.2: The pictures on rainforest for the second composition task



5.2.2.1.3 School C

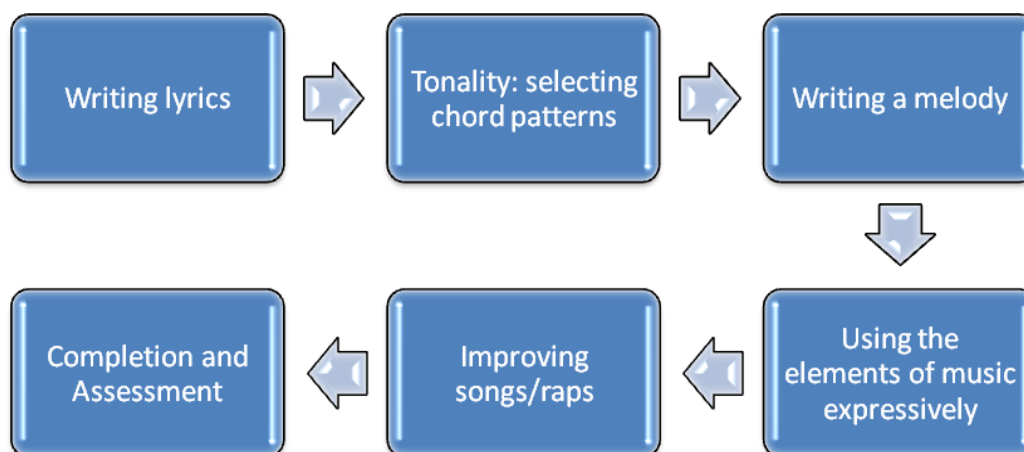
Composing a SD song or rap was the main learning task for School C, and Mr. Davis, planned the whole unit – ‘Songs to save the Earth’. At first, Mr. Davis conceived of integrating the issues of SD into Year 7’s ongoing curriculum theme of – cartoon music, but very few resources involving both cartoon music and SD could be found. After several days’ online searching, Mr. Davis changed his mind and tried to make students’ learning around SD songs. He talked about the process that,

‘Er, basically, once I knew what sort of resource I had, I thought, ok, these resources are mostly songs, so it makes sense to me they could work to write a song. Because I can use the other songs as examples, models, then what they got to do. So I thought it was the mixture of songs, listening to some songs, answering questions to identify what they can hear, and then I thought they have to learn about how to write songs. So they will learn about tonality and learn about how to write a melody, and then once they got the skills, they are gonna put it all together and have songs with the lyrics.’

In comparison with Schools A and B’s music-SD lessons which also contained the learning task of composition, School C’s students completely focused on one piece of

composition work. The three schools employed different teaching methods of composition. In School C, the students were required to compose a song or a rap in pairs about sustainable living during the 3-week unit. The main task was divided into five sub-tasks, which are shown in Figure 5.3, since Mr. Davis thought ‘that would help students with the structure of composition.’

Figure 5.3: Mr. Davis’s process of teaching composition in music-SD lessons



5.2.2.1.4 School D

Creating and performing with junk musical instruments were the focal points of the music-SD unit in School D. Students in the sample class formed their own Junk Band, made their own musical instruments by using recycled materials, brought from their homes, and played these in a junk band performance with fellow students. Mr. Morsi got this idea from his teacher training experience. He recollected this experience in which ‘we used all the junk that the school had and actually created the band and everything. So it gave me an idea’. It seems to be the only idea that occurred to Mr. Morsi’s mind when he tried to link the concept of SD with his music classroom teaching. As he pointed out, ‘if I didn’t do the junk band, I don’t know what I would do in the lesson, and I don’t know how they would compose towards sustainable development.....I wanted to do to be musical, I wanted them to be as creative as possible.’

There are theoretical and practical elements of the learning objectives (Appendix 15). The theoretical one was learning ‘something different about sustainable development’, in

Mr. Morsi's words, and the practical element was 'learning something new and then applying that to the performances'. The music-SD lessons were designed based on these learning objectives which were broken down into three sections. According to Mr. Morsi's description, the first part provided the theory base in which students found out about SD, which inspired them to 'think about how they can apply that to the instruments that they make' (Mr. Morsi). The second practical part engaged students to use their knowledge of SD to create their own instruments and compose music in groups. In the last part, students performed what they had learned. The three parts were all included and occurred in this order in most of the music-SD lessons (Lesson 2, 3, 4 and 6), the detail of which can be found out in Appendix 15.

5.2.2.2 How the music-SD lessons integrated into the national and schools' curriculum

As the music teachers were required to design the music-SD lessons based on the National Curriculum (NC), the pedagogic possibilities and related strategies were sought throughout the teaching intervention. The National Curriculum requires three essential skills, in Mr. Morsi's words, three 'foundations', for the music teachers in state-funded schools to cover and expand in their music lessons. These are performing, composing and listening (QCA, 2007). Mr. Morsi described that:

'For the national curriculum, the main thing is that the students are able to compose, listen and appraise, and perform, and all the things they are doing in the lesson are centered on the composing, the listening, and the performing of music.'

As with the normal music lessons, the music-SD lessons in the four schools delivered these three essential skills. Table 5.4 shows the variety of opportunities that were offered to students. Even though the learning events regarding the listening skills took place throughout each lesson, a particular focus on composition was made by all music teachers. The music teacher in School B explained how he incorporated SD from the music perspective:

'There are different opinions on how it works. It is really interesting. Some teachers think that you should have all three strands in every lesson, which I personally don't think it is practical.....So they (the music-SD lessons) were obviously hitting the composition thing, they were hitting performance, because the performing is based on one and other, and listening and appraising came a bit. We got to start in some periods of assessment. So listening to others' pieces and making comments about it, like that kind of thing, which kind of kids' listening and appraising. So we will fit all strands into it, but the focus is definitely on composition.'

Table 5.4: How the music-SD lessons met the requirements of NC

	School A	School B	School C	School D
Listening & Appraising	<ul style="list-style-type: none"> ●SD songs; ●Music videos; ●Teacher's demonstration; ●The sound of keyboards; ●The raps (recordings & performances). 	<ul style="list-style-type: none"> ●The sound of keyboards; ●The sound of computer; ●Teacher's demonstration; ●Students' performances. 	<ul style="list-style-type: none"> ●SD songs; ●Music videos; ●Teacher's demonstration; ●The sound of keyboards; ●Students' performances. 	<ul style="list-style-type: none"> ●Music videos; ●Teacher's demonstration; ●The sound of instruments; ●Students' performances.
Composing	<ul style="list-style-type: none"> ●SD raps (lyrics & melody). 	<ul style="list-style-type: none"> ●Two pieces of music (melody). 	<ul style="list-style-type: none"> ●SD songs or raps (lyrics & melody). 	<ul style="list-style-type: none"> ●Rhythm patterns.
Performing	All students: <ul style="list-style-type: none"> ●Teacher's rap; ●Students' raps. 	Some students: <ul style="list-style-type: none"> ●Students' musical works. 	Some students: <ul style="list-style-type: none"> ●Students' musical works. 	Some students: <ul style="list-style-type: none"> ●Rhythm practice; All students: <ul style="list-style-type: none"> ●Junk band performance.

In order to avoid the negative effects of ESD on music teaching and students' music learning activities in a systematic manner throughout the Key Stage 3, and to facilitate ESD to be an integrated part of the schools' curriculum, rather than merely be a special add-on subject, all participating music teachers were encouraged to incorporate SD in their own curriculum and undertake their music-SD lessons in a normal way of teaching. According to my classroom observations both in pre-intervention and music-SD lessons, and music teachers' elaborations, not many differences were noted between the two lessons.

Firstly, the structures of the two types of lessons were similar. For example, both the normal lessons or the music-SD lessons in School D were split into three sections – theory, practice and performance, and set up a warm-up activity as the ‘starter’ and ‘plenary’. As the music teacher pointed out,

‘It depends on the content of the unit. Er, because I knew it was going to be rhythmic instruments, it makes more sense to have rhythmic style, rather than anything that has tone. So if you had a singing unit, er, instead of doing a rhythm exercise, we can get them to sing different notes from the piano, things like that.’

In terms of the teaching methods, each music teacher looked at different ways of including the SD issues into their teaching work to ensure the students understood the concepts. This was the common difference between the two types of lessons in each school. Apart from this, the music teachers in Schools A and D thought the other teaching methods in both lessons were quite similar. Mr. Morsi (School D) made clear that both lessons were ‘looking for specific skills, the specific knowledge, how that knowledge is applied and how well it has been applied’. There was a definite change in the way the teachers in Schools B and C tried to get students involved in the composition. Mr. Wilson in School B pointed out the differences in the teaching of composition between normal music lessons and the music-SD lessons:

‘In terms of with the SD group, there was very much here is an inspiration, use pictures to create something. With the other groups, just do what you want.....we made just like, here is the scale, here is the structure, kind of start composing. So this is more open task.....So I think the kind of raw material the students started was quite different. Er, with the other groups, I’ve set probably less talk and probably did more listening. Again, I think something was struggled with the SD stuff was (that) I couldn’t figure out how listening can be connected to SD.’

For Year 7 students in School C, the melody that they normally created was the combination and continuous repetition of no more than three notes to manifest the different musical elements, such as pitch, tempo and dynamics. It is more abstract and atonal, rather than a real song melody. However, in the music-SD lessons, all students started off with learning ‘chord patterns’, which is more difficult and was only comprised

in the learning content of normal lessons for the more able students and the Year 8 students.

Moreover, most of the musical learning tasks and learning content, including musical knowledge, theories and skills, within the music-SD unit in Schools A, B and C were comprised in their Scheme of Work for Year 7. In the three schools, importance was attached to composition and keyboard skills, as two vital parts of Year 7's music learning. Meanwhile, the music theory, which was taught in music-SD lessons, was also taught along with a composition task in other Year 7 students' music lessons. However, there was not any non-musical content that was particularly stressed in the normal lessons. As a result, the students were in touch with more musical theories and practices without the learning task of SD. Mr. Davis (School C) explicated that:

'Er, because it is cross-curriculum now, they are learning more different things. It might mean the topic I normally do probably go into a bit more depth about the music. Because I am teaching about sustainability as well, it doesn't give me as much time to them talking about the music as much depth. But I think I'm still happy that they learn it as much as they need to, so they still learn music.'

In School D, students normally practice a piece of music on their chosen instruments, rather than create their own instruments and then use them to create rhythm composition. 'Junk Band' is a new topic which is not included in the school's music curriculum. As Mr. Morsi stated, the normal and music-SD lessons 'gave different experiences for the students'.

5.2.2.3 The selection of learning content regarding SD

ESD, which 'is emerging as the unifying theme for many types of education', 'focuses on different aspects of sustainability' (UNESCO, 2012a p.5). The three aspects of SD: Society, Economy and Environment, contain a lot of issues but due to the limited number of lessons in this project, the music teachers had to select the most suitable topics of SD for classroom discussion and teaching. Some of them seemed to struggle with this selection.

'Obviously, I'm not familiar, totally unfamiliar with the subject content. There is a lot of stuff there.....many governing bodies and institutions, you know, experts, lots of reports about this, so you have to find and choose material that is appropriate for each group (of students) and lessons.....A lot of things I read are important, but you cannot integrate in your lessons. If you give the material to the students who don't speak English as their first language, they are immediately ruled out the class.....So obviously try to find what initially you could just get students start to think about the whole topic, and also integrate it into what you planned to do with them already.' – Mr. Campbell (School A)

Mr. Wilson (School B) added that 'If you go with too much detail about it, it would become probably quite boring for them (students). So kind of try to pick up really key, important messages'. It was clear that the music teachers chose the SD topics in accordance with their own' interests, the degree of perceived importance, the possibility of linking it to music, and students' interest in and the level of accessibility of this issue. Take School B and School D as two examples, in School D, when Mr. Morsi selected the SD topics for his lessons, the first thing for him was to make sure that whatever he talked about or did 'was going to be possible for the students to be able to understand and do'. There were two main factors that were primarily considered when Mr. Wilson in School B made a decision on the SD teaching content. First of all, he planned to 'use the idea of SD as inspiration for something musical' in his lessons. Therefore, at the planning stage, he tried to look for SD topics, which 'were most related to music' and most likely to be 'a good inspiration for something musical and composition'. Secondly, he suggested that the highest priority of a teacher should be given to the issues the teacher has a passion for. He said, 'as a teacher, if you are not passionate or interested in something, then you can't expect the kids to be.'

The meaning, issues and three aspects of SD were covered in the music-SD lessons (see Table 5.2) in different combinations. Six topics were common to all interventions: what is sustainability, what are we doing which is unsustainable and how do we promote sustainability, and the meaning of SD, the SD literacy, environmental issues and '3Rs' (Reduce, Reuse and Recycle).

Firstly, the meaning of SD was given much attention in each school's music-SD lessons, particularly in School B, in which the students were pushed to remember and recap the meaning of SD as well as the other terms, such as 'global warming', in different ways :

'If students have a clear idea exactly what it means, everything else is easier for them to come to understand and relate to. I think if you give them a lot of different things, you don't tie and give this one suitable big idea, they just see them as different things.....I think in Year 7, you need repetition for the students to remember stuff, like what sustainable development is. I think that enables them to draw the links between the other things they were learning to that kind of key concept.' – Mr. Wilson (School B)

Moreover, the development of students' SD literacy was considered during the process of lesson planning in all sample schools. In 2012, the priority of improving standards of literacy was stressed by Her Majesty's Chief Inspector of Education, Children's Services and Skills for England. As a result, a number of schools started to deliver cross-curricular improvement in children's literacy (Ofsted, 2013), which influences the participating music teachers' classroom teaching.

'They dealt with vocabulary and terms. They are all about sustainability and what they can do, what people can do to impact the world.....Any students, who want to confidently communicate about a topic, need to be aware of the key terms, the key terminology within that, and spelling was important for those students to communicate effectively in the literacy perspective.....For the last ten, fifteen years, it (literacy) has been squeezed out. People now are saying that students' literacy is very weak, and therefore, we as educators should integrate it back to the normal practice, and students perceive it to be a normal part of their learning'.
– Mr. Campbell (School A)

In terms of the issues relating to SD, the students in each school were encouraged to look at relevant SD issues and draw upon the examples of the past to create solutions for current and future problems. In music teachers' opinions, the issues selected are all interconnected, as well as related to students' lives. As Mr. Morsi made clear:

'If we were looking at the pollution side, some of the students didn't realise the impact of pollution and understand how sustainable development can prevent it, or is limited to an extent, some may never had any regard for the environment, but now they do. They are the reasons as well as (for) the other topics. So we

looked at the different branches of sustainable development and why it's important, and then try to connect it to them personally.'

The issues of environment, such as nature, pollution and climate change, and '3Rs' received attention in all schools' music classrooms. These environmental issues were placed great importance in Schools A and B's lessons, and also frequently emerged in Schools A and C students' lyrics writing. '3Rs', which were considered as 'an important part of SD' by Mr. Morsi, was the main point of SD learning that ran through the unit in School D, and also was one of the most popular topics for classroom discussion in Schools A, B and C. It was interesting that no music teachers focused on issues with regard to the economy in their music-SD lessons, except Mr. Morsi in School D. Mr. Campbell (School A) illustrated that,

'We look at the learning from what they (students) know and stretch that.....Obviously, our students have very limited knowledge about economy. They are really aware of the issues with the environment. Some of the more able students might draw on some other elements of sustainable development, but mostly initially on environmental things.'

In contrast, Mr. Morsi held the opinion that 'I looked at the economic stuff, because, er, some of them may come from low income backgrounds, and if they did want to create an instrument, this is now giving them the idea of creating instrument.'

5.2.2.4 The teaching strategies for promoting students' SD learning

I observed that the four music teachers made use of a variety of teaching methods in the teaching intervention programme, and tried to set up different types of learning experiences for students to achieve the intended learning outcomes. Being effective and skillful teachers, using a wide range of teaching approaches in a flexible way was suggested by Altun (2005) as one way of ensuring students' learning in classroom activities. Additionally, Plunmeridge (1991) emphasized the significance of the selection of suitable strategies for students' learning. He contended that music teachers 'have to be in a position to decide on suitable learning strategies in order to assist pupils over particular hurdles' (p.71). Faced by a lot of choices of teaching methods or styles on offer, a question was posed by Laar et al. (1989 cited in Altun, 2005) regarding which is most

effective. Tait (1992 p.525) argues that 'successful music teachers develop many strategies and styles in order to address varied needs of their students. Accordingly, there is no one best style for teaching music, but rather a repertoire of strategies and a range of teaching styles'. Effective teaching in music classrooms is most likely to be provided by teachers who use a combination of strategies or styles that are 'most appropriate to particular needs, particular stages of development, and particular children at various times' (Altun, 2005 p.60). Mr. Campbell (School A) argued that making students' learning experiences varied and enjoyable was a priority, and using the variety of methods would assist this desire.

A range of teaching strategies for motivating and supporting children's learning were discovered in all four music teachers' practices. Altun (2005) regards students as one of the essential elements in the process of music education. He found that some students, with less interest in joining the learning activities or with limited musical or learning abilities, are viewed as a factor which may affect 'teaching in a negative way' and make the classroom teaching complicated and even difficult (2005, p.190). 'Immersion' was seen as one of the prerequisites for improving the quality of learning in music classrooms, including developing the understandings and necessary skills (Barrett, 1992). Therefore, finding practical solutions to overcome the problem and enable children to be easily, actively and deeply involved in the learning process is important. In my research, similar teaching methods and strategies for students' SD learning were incorporated by each teacher into the students' classroom experiences (see Table 5.2). Apart from a number of SD-related musical activities, which have been discussed in Section 5.2.2.1, a number of strategies including visual, audio and kinaesthetic were employed to stimulate students' interest and developed it into individual interest in classroom learning (Hidi & Renninger, 2006). Other strategies, such as brainstorming, questioning and discussing, were used to promote students' engagement and immersion in the classroom learning activities.

Firstly, video-based resources were used in Schools A, C and D to help students understand the concept and issues of SD and their relationship with music. This also provided them with more ideas and inspirations for their classroom work. Moreover,

these videos also supported students' emotional engagement, as the participating music teachers explained. It seemed to Mr. Davis (School C) that watching video is a 'powerful motivation and stimuli' for children's learning, which may promote longer-term memories stack up against reading factual written materials and engage students in learning SD to a higher level. Take School A as an example, the music teacher and students watched different types of musical videos associated with SD: a cartoon video and a short film with accompanying music relating to SD, a song video called 'Reduce, Reuse, Recycle' and a number of young people's performances of their raps with regard to the theme of 'recycling'. Mr. Campbell said,

'Students were likely to perceive sustainability to be an academic and theoretical thing.....For them, a less practical, less creative sort of approach might not produce many creative and effective outputs at the end. So basically, I think going from them (videos), 'ok, this is sustainability and here is the rap, let's perform it', 'ok, let's have a goal to create your own'. Kids enjoyed that. They were enthusiastic to participate in, and their learning was not tough.'

Mr. Campbell added comments on his self-evaluation sheet that the video-based resources were 'used more than usual' and were 'attractive to most of the students'.

Secondly, in order to create students' better understandings of the earth they live on, problems around them and the meaning of SD, pictorial information became the chief vehicle for inspiring students to pay special attention to these issues in School B. School A also used this method for attracting students at the beginning of learning about SD. Mr. Wilson (School B) explained that 'using the visual stuff is important I think. I think kids generally respond a lot (by) visual stimulus.' I noticed excited and surprised expressions on students' faces when they saw the pictures in both schools. In School A's lessons, the introduction of SD began by looking at photographs relating to unsustainable problems, such as flooding, the emitting of black smoke from factory chimneys, many dead animals in a forest, the melting of the Arctic seas, and poor and starving children in Africa. In School B, as described in Section 5.2.2.1, the music teacher used two pictures as a set for students to compare and 'think about the changes in the landscapes', which 'fitted with what students were doing next for the composition tasks', described by Mr. Wilson:

'What I was trying to do and what I think the students in this school tend to respond well to is, er, the links to the world, so about the large world outside. I think seeing things, like the strip-mining photos that showed them, has an impact on them. So I was trying to get them to see the clear reality of things.....I think to an extent they worked. I think I need to do more as well.'

The centrality of listening in music learning was embodied in all music-SD lessons in the project. The students heard various types of music from videos, audio recordings and their teachers' demonstrations, and listened to pieces of music they and others played and performed. As Philpott (2001 p.85) argued, 'indeed it is impossible to imagine music making of any type without listening and appraisal (although the latter might occur more at an intuitive level). Listening and appraisal are the common elements of being an audience, performer or composer and as such are the 'glue' for both immersion and integration'. Philpott further suggested to access students' understanding when they are immersed in listening. Different pieces of music were played in Mr. Davis's (School C) lessons. He talked about the reason for doing this:

'.....so that they could be influenced as they can hear what other people are doing and give them ideas. Like when I play them a piece of music about sustainability from the internet, they can hear the lyrics, then it might make them think about sustainability and give them ideas for writing their own lyrics. Er, also by listening to different pieces and different styles, it might help them come up with ideas for what they are going to do.'

Moreover, for engaging students in the classroom activities, pop music or the songs matched with cartoon scenes were played in Schools A and C. Altun (2005) indicated that popular music greatly influences children, and the music teachers in both schools felt that students, who are not enthusiastic about learning in their lessons, tended to be intent and excited while they were listening to these two kinds of music. Mr. Davis in School C described why he played pop songs and what happened in his music-SD lessons during the post-teaching interview:

'I thought I had to start with music those kids like.....It was hard to try to find one that I thought they'd like. A lot of ones I can find on the internet were very exciting, some of them were interesting, but they weren't played because these kids would not like to listen to. Er, they (pieces of music) had to be some which is special about it (SD), like had to be funny, or they had to be a really good video,

or something to look into it.....Most of the pieces of music I played they liked, and the other one I played that they didn't realise so much. The problem is kids' age, they don't like it, so they just stop listening, and they talk, they just talk over.....I thought the Muse one they liked, because that was quite modern. Er, I think they quite like the one was rap, the rap one. They weren't so keen on the Michael Jackson one, I think it maybe, because maybe it is heard before, and it's quite slow, it's quite slow tempo. So they need something that they like, that kind a draws them into, so they quite like, they quite like fast music, they quite like modern music.'

The activities in the music-SD lessons, which involved listening to pop music about SD issues, demonstrated how the musicians, who students might be interested in and familiar with, use music as 'a vehicle of expression', a means for communication and 'a way to convey individual voice' (Garnett & Allum, 2011 p.7). This played a potential role in developing students' understanding of the relationship between music and SD.

According to the discussion above, students in the four classrooms were motivated by resources inside and outside of schools, such as different types of musical videos, pieces of music and pictures. In the meantime, other teaching strategies were incorporated within the classroom activities for stimulating, motivating and fostering students' learning. In Mr. Morsi's opinion, 'the problem with the children is that they can get bored very easily, so you need to keep giving them new things. Because the young want to do new things all the time'. Therefore, encouraging students to practice and perform in different ways was employed by all participating music teachers as a means to keep the students enthusiastic about the SD unit. Firstly, the kinesthetic side of the learning activities was carried out in School D. The lessons involved warm-up activities, in which the students were required to use different parts of the body, such as hands and feet, or the instruments they made to beat the rhythms individually or in small groups. The instrument making was described by Mr. Morsi as a process of 'applying the knowledge and skills that students have learned through music to their instruments and being able to play'. In order to make the music-SD lessons more interesting and increase students' participation, competitive group activities were organised during performance in School D, and to a lesser extent in School A. In School D, Mr. Morsi's past experience in junk band activities offered him a lot of ideas as well as the confidence in turning these ideas into

the students' learning tasks. During the different learning tasks for composition, Mr. Morsi stimulated each group of students to compete with other groups for promoting their composition and instrumental abilities, as well as their ability to connect SD with their musical work. Furthermore, game-based learning was incorporated into Schools B, C and D's classroom activities, including a 'Card Sorting' task in School B, which was designed as a plenary for students' revision of SD knowledge; an 'Exit Ticket' game in School C; and 'African Drumming' in School D, which focused on improvising and repeating rhythmic phrases by using recycled instruments. Taking 'Exit Ticket' as an example, at the end of the first lesson in School C, each student was required to write one thing on a yellow post-it note they can now do to live more sustainably. Once they had stuck this on the whiteboard, they had their 'exit ticket' to leave the classroom. As Mr. Wilson pointed out, 'I tried to make sure the plenary in the lessons was something that was effective and could really help me.....The post-it notes told me which students understood it really.....they could answer that if they understood it.'

Brainstorming, which was considered as a good way to start discussion and composition by music teachers, was employed in Schools A, B and C's music-SD lessons. Brainstorming depends 'on the capability of human brain to make association' (Mateen, 2013 p.1090). According to Al-khatib (2012), Almaghawry (2012), Al-blwi (2006 cited in Mateen, 2013) and Sayed (2009 cited in Mateen, 2013), it can be used as a tool for helping the learners to solve problems while persuading creative thinking and giving each of them the possibility to articulate and share their ideas, assess the views of others, and create and support new ideas without inhibition. As Mr. Davis in School C illustrated,

'When they do a brainstorm, they come up with lots of words, and that helps them come up with ideas and leading towards writing a song or rap.....(It is) a really valuable way for the teacher to find out what they (students) already know, and give them a chance to share what they know with the rest of the class and generate ideas from them as well.'

In order to develop students' cognitive skills concerning SD and help them create their own lyrics more easily, creative forums for generating ideas were conducted in the three schools. All students in these schools were encouraged to brainstorm issues associated

with sustainability, and some of them dealt with different materials on SD with technical keywords during the process.

In addition to these, the opportunities for interaction with students were seized by the music teachers to enhance motivation and engagement. Class discussion, which 'allows for the transfer of information' amongst students and teachers and for the practice of communication skills (UNESCO, 2012b p.17), was one of main strategies for promoting students' SD learning in all schools. In the lessons, music teachers used discussions to deepen students' understanding of the key issues and to assess their knowledge and application of the concepts of SD.

Other types of teaching techniques tended to be used along with class discussions. Connecting students' daily life experiences with the discussion content was the first approach that was employed during the discourses between teachers and students to support students' intellectual engagement. Students with a variety of life experiences can enrich the mandated teaching content (UNESCO, 2012b). In the study, the music teachers encouraged students to contribute to discussions relating to SD with their own experiences and observations from their daily life about what is or is not sustainable. What students experienced and already knew was incorporated into the discussions, in order to provide students with real life applications of concepts. 'It's very interesting to get to know what the kids have known, what they are thinking now and their experiences about it (SD). I try to get the chance to make other kids listen to them.', said Mr. Campbell (School A). Secondly, during the class discussions, questioning, which is considered as a key component in the teacher-student discourse and 'a psychological tool to mediate students' knowledge construction and support them to move towards their zone of proximal development' (Chin, 2007; Vygotsky, 1978; Zhai, 2012 p.310), is frequently used by the four teachers. As Mr. Davis (School C) argued, 'one of the best ways to try to sort of get them excited about something is conversations and asking questions about it.' It seems to him that the more questions that students ask means that they are more interested and excited about the topics and would learn more. In Schools A and D's lessons, a series of open-ended questions were asked to facilitate 'students' critical

thinking' and their expressions of opinions and ideas so as to promote their conceptual learning, as Mr. Morsi (School D) explained. Mr. Campbell in School A also described the reason for employing the strategy of prompting and guiding students that 'when I ask them, they have to think. So it gives them an opportunity to think and talk about it, and develop their understanding'.

Box 5.1: The transcript of one part of teacher-student discussions in the 2nd lesson in School A

(Watched a short film on sustainability)

Teacher: *A pleasant movie, right? Hopefully, it makes you think some.....What things struck you in that movie?*

Student A (boy): *A lot of pollution in big cities.*

Teacher: *Ok, a nice one.*

Student B (boy): *consumerism?*

Teacher: *That is just about what we eat and what we drink. You know, that maybe in Europe, and among other population. What else that struck you in that movie? Come on.*

Student C (girl): *So much stress?* (Teacher: *Ok*) *and rubbish.*

Teacher: *Only one type of stress or lots of types of stress?*

Student C: *Lots.*

Teacher: *Give me some examples.*

Student C: *Er, like garbage, pollution and toxic gas or wastes.*

Teacher: *Factories. That is general stress, where fresh air we breathe, where we live and we travel.*

Student B: *Lots of shops around.*

Teacher: *Lots of shops. What shops do you choose? How often do you go shopping?*

..... (Eight students actively shared their experiences and habits of shopping to the music teacher and the class.)

Teacher: *What pressures are the consumers under?*

Student D (boy): *It means like.....spend too much, basically, er.....*

Teacher: *Let me give you an example. How many people got computer games? Why did you buy it?*

..... (Around one third of students, especially boys, scrambled to talk, and finally 5 boys answered.)

Teacher: *If you use computer games, you guys or someone should have batteries and need to recharge, use PC or PSP3. Think about the electricity, just like the bus, and then what about the fuel use, like the computer games. Ok, That's just something what you are doing. What else?*

..... (The discussion was continued.)

Using School A as an example, part one class discussion, which occurred after watching a short musical film regarding SD, in School A as an example (see Box 5.1). Mr.

Campbell started the discussion by asking students to recall the issues which appeared in the film, and then used one student's answers to focus the discussion on consumption and connect the topic with students' daily life experiences. During this process, Mr. Campbell prompted students' ideas and encouraged them to contribute more to the discussion by proposing questions consecutively, and used a wide range of dramatic facial expressions, body gestures and voices to attract and keep students' attention. Box 5.1 indicated that the students responded to the music teacher's questions with less enthusiasm at the beginning. However, after Mr. Campbell's persistent questioning, an increasing number of students joined in the conversations. When Mr. Campbell followed one student's answer to talk about consumption by asking students about their shopping habits, around one third of them, particularly some boys, raised their hands and showed their desire to share their own experiences and perspectives. The data demonstrated that questioning and the connections with students' daily life experiences are likely to be two efficient pedagogical strategies to engage students in thinking about SD issues and facilitate the process of meaning-making and understanding.

Mr. Davis in School C employed similar strategies during teacher-student discussions in his music-SD lessons. Although there were some students who still interrupted the music teacher's conversations occasionally or engaged in other off-task activities, the active participation of more than half students in their discussion experiences led them to actively think and ask questions, which could promote the development of their knowledge, understanding, opinions and values about the SD issues they talked about (McNaughton, 2008). Mr. Davis mentioned it during the post-teaching interview that 'it seems some of them start asking questions more and more, and want to ask questions, and then, the more questions they ask, the more interested they get, the more excited about it'.

The combination of various teaching methods provided students in the four schools with different modes of learning and a holistic learning experience. The lessons in this research integrated two areas of the curriculum – SD and music. In addition, these children were also encouraged to make further connections across other disciplines:

language and literacy, computing, and art, design and technology. The lessons in the music and SD contexts offered students opportunities to access the professional vocabulary and terminology of SD and music, write lyrics and answers, read materials related to the SD aspects of the topics, interpret the SD issues, search resources from the internet, create music on computers, and design and make their own junk instruments. This supports the evidence obtained from McNaughton's (2008) PhD research work on drama and ESD suggesting that the variety of modes of learning and the holistic nature of the students' learning facilitate the students' engagement and active involvement in their learning experiences.

5.3 The interactions within the music-SD lessons

This section evaluates the interactions of participants in the music-SD lessons and their physical, emotional and verbal responses to these lessons. According to Varda, Retrum and Kuenzi (2012), participants tend to form relationships in a classroom, which may produce some effect on their learning experiences and outcomes, and pedagogy appears to affect participants' interactions in the classroom. However, as they argued, the most beneficial way to improve these interactions is to combine different types of teaching approaches. In this section, the data gathered from person-to-person and person-to-lesson interactions is subdivided into four categories: teacher-student interaction, student-student interaction, student-lesson interaction and teacher-lesson interaction. This will help to answer the research question – *'What are the actions and interactions of the participants (both children and teachers) within the music lessons? How do they respond to the lessons? What about their feelings?'*

5.3.1 Teacher-student interaction

A review of previous educational research reveals the determinant role of the classroom interaction between teachers and students in students' academic achievements. The teacher is viewed as a prominent contributing factor in the establishment of classroom atmosphere and in the effective learning of students (Creemers & Kyriakides, 2006; Fan, 2012). Students tend to be influenced by their teachers both directly and indirectly,

through the patterning of their interactions with teachers (Fan, 2012). According to a number of studies (e.g. Englehart, 2009; Frymier & Houser, 2000; Telli, Brok & Cakiroglu, 2010; Vasileiou, 2002), teacher-student interaction and classroom climate were argued as significant variables in explaining variation in students' attitudes toward the learning content and their learning outcomes. A positive teacher-student interaction constructed in the classrooms plays a vital role in the provision of a sense of comfort and belonging for students, the enhancement of students' enduring motivation, and the facilitation of their personal growth and social development. As a result, effective skills of interpersonal interaction are required in the process of relational development for the achievement of satisfying outcomes (Graham, West & Schaller, 1992 cited in Englehart, 2009).

In this project, all of the participating music teachers tried to achieve a balance between offering enough freedom to their students and controlling the music-SD lessons, which manifested in the way in which they interacted with the students. As Englehart, (2009 p.718) argued, 'those who gravitate too far toward the control end of the spectrum may create a psychologically cold atmosphere not conducive to the child's development. Those situated too close to the freedom end can produce an environment lacking the structure necessary for teaching and learning to take place'. Both control and freedom were incorporated into the four music teachers' interaction style, and implemented according to students' individual needs and the dynamics of the class. Throughout the music-SD lessons, the participating music teachers acted out different roles facing the students, such as director, provider, listener, facilitator, motivator, supporter and evaluator, which will be discussed in the following paragraphs.

By and large, the structure of the music-SD lessons in each school was teacher-directed and student practice-based. To a large extent, the music teachers controlled and directed the majority of classroom activities. In most cases, students behaved relatively passively during the teacher-student interactive events, such as during the teachers' introduction, explanation and demonstrations, the discussions between teachers and students, and evaluations, which all tended to be teacher-centred and worked with a narrative-style in the normal music lessons. As a result of this, all of the music teachers attempted to

stimulate students' interest in the teaching content and promote their participation in the learning context and their engagement in the curriculum. For instance, the teaching-learning discourse in the four classrooms changed from instructor-dominated to instructor-led. This was exhibited by the evidence that most of the time, the four teachers appeared in the process of discussion with students was like 'talk-scaffolding', rather than 'knowledge transmission' (Zhai, 2012 p.310). The transcript of one part of teacher-student discussions in Box 5.1 can be seen as an example here.

The attentiveness of students of all age levels could also be decreased by increased teacher talk (Tait, 1992). Therefore, the music teachers, who interacted with students as providers, offer students autonomy in a structured and respectful setting. Within such a relationship, the four teachers provided opportunities for their students to think and express their views freely, and allowed them to support or reject others' ideas and make their own choices, which are necessary skills for taking effective action towards for a sustainable environment (McNaughton, 2008). These students were given autonomy not only in the process of teacher-student discussions, but also within the student-student interactive activities.

The music teachers in the four sample schools employed different strategies (see Figures 5.4 & 5.5) to 'educate' the students' thinking, so as to 'enable them to articulate, reflect upon and modify their own understanding' (Zhai, 2012 p.309). In Schools A, C and D, mostly the discourse took place in a chain of interactions (initiation-response-feedback-response-feedback). In contrast, paired discussions were carried out with support from the music teacher in School B in which the time that the music teacher spent on the discussions with the whole class of students was obviously less than the other three schools. The students were given opportunities to practice their summary skills at the end, and it was evident from this that the students in School B had more autonomy during the discussion sessions. Additionally, student autonomy was offered throughout the process of students' practice and rehearsal in each school. Students in all four schools were afforded freedom to complete their learning tasks. For example, in School C, apart from the ways of working on composition, students also had

the right to choose the music style they composed in and the SD issues included in their lyrics. Mr. Davis made it clear that,

'The reason I did was because sometimes, some students, especially the girls, don't like rap, because they found embarrassing or they think it is too hard, they can't do it. Er, so I want to give them the choice to sing. But then some students, if I said they all had to sing, some of the boys wouldn't want to sing. So I thought if I gave them the choice, then they would more like to do it.'

As Englehart (2009) stated, providing students with autonomy in classrooms promotes the motivation to take an active part in learning. Moreover, the teaching strategies which are based upon open, learner-centred and participatory models of practice, are common to education towards sustainable development (Palmer, 1998).

Figure 5.4: The format of classroom discussions in Schools A, C and D

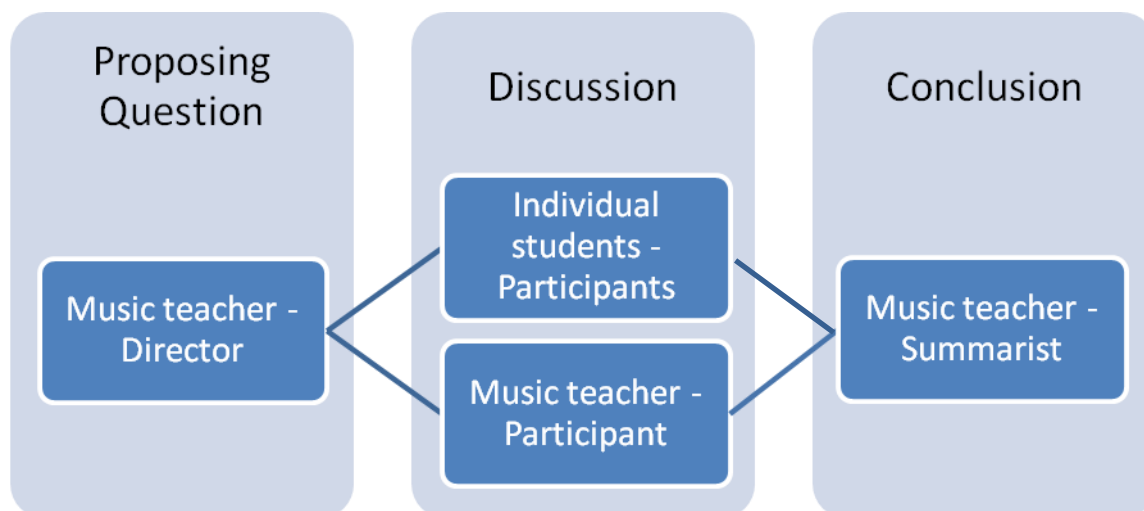
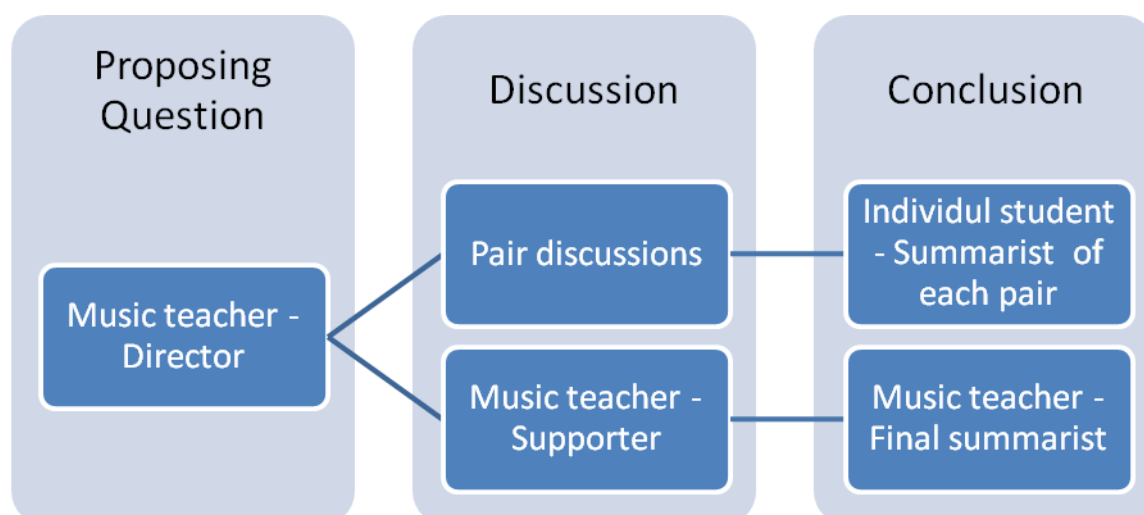


Figure 5.5: The format of classroom discussions in School B



In addition to the above roles, it was observed in the classrooms that all of the participating music teachers supported the students' learning through verbal behaviours, such as praising, using encouraging vocal tone, pitch and words, agreeing, questioning, extending ideas and making suggestions, and non-verbal behaviours, such as listening, nodding, smiling, dealing with a technical emergency and demonstration. Figure 5.6 displays a picture in which Mr. Campbell was listening to one group of students' rehearsal work and offering comments to it. Furthermore, within the music-SD lessons, the music teachers also acted as facilitators of the learning experience, attempted to facilitate students' music learning linked to SD learning and create a positive atmosphere conducive to engagement and achievement in the learning process.

Figure 5.6: The music teacher put forward suggestions to one group of students rehearsing in School A



According to the findings obtained from observation, interviews, informal conversations, and questionnaires, the great majority of students in School A enjoyed the 7-weeks lessons. However, about five to six students had recently moved to the UK from non-English speaking countries and appeared not to be able to engage in the lessons fully, because they 'didn't understand totally', as Mr. Campbell explained:

'I think the level that we engaged students that was not very difficult, but there were some students who got English as the second language, Maybe, that's a challenge to keep on it to make progress for every subsequent unit.....So say for an example, some students who got good command of English were able to communicate more effectively about understanding the perceptions of SD and the music related topics with that. But other students, you know, for example, have limited confidence in terms of the usage of English, and therefore, maybe, you know, that may with difficulty and in terms of bringing that in the large group situation. I supposed it would be better to work with them in small groups and one to one.'

As a result of this, Mr. Campbell, as the motivator and supporter of students' learning, used his position to help them in their work and develop their confidence in understanding and communication, as well as to encourage them to progress to the next stage.

5.3.2 Student-student interaction

While a number of children thrive in independent learning environments, Varda, Retrum and Kuenzi (2012) suggest to maximise children's interaction and organise team-based or group work activities in the classroom for better learning outcomes. Moreover, student-centred learning is also emphasised by Law (2003) with its potential for empowering learners towards transformational outcomes. As Mr. Morsi (School D) made clear, 'most of these students do not respond well to teacher-centred learning. Within the lesson, the students need to be engaged, and the only way to create their engagement is to have students' participation'. In this project, the regular interaction among students in the music-SD lessons occurred in a student-centred and collaborative environment in which group or paired work activities took place. In these activities, students were required to pool their knowledge and use the skills of negotiation and collaboration, which are central to SD (McNaughton, 2008), to reach a consensus on their musical works. The opportunities provided to children in different schools' classrooms for their interaction with each other are indicated in Table 5.5 below.

Table 5.5: The student-student interactive activities in music-SD lessons

	Student-student Interactive Activities	The Level of Engagement
School A	Rehearsed the rap – ‘Together We Can’ in groups	★★★★
	Brainstormed and wrote lyrics in pairs or groups	★★★
	Composed music for their own raps in pairs or groups	★★★
	Performed in pairs or groups	★★★★
School B	Brainstormed and discussed SD issues in pairs	★★
	Worked on the ‘card sorting task’ in pairs	★★★★
	Composed two pieces of music in pairs	★★★
	Performed in pairs	★★★
School C	Brainstormed and wrote lyrics in pairs	★★★
	Composed music for their own songs or raps in pairs	★★
	Performed in pairs	★★
School D	Created junk musical instruments in groups	★★★★
	Composed rhythms in groups	★★★
	Performed in groups	★★★★
	The selected students showed their instruments to the class	★★★★

Note:

All students actively participated: ★★★★★ Most students actively participated: ★★★

Half of students actively participated: ★★ Less than half of students actively participated: ★

It can be seen from Table 5.5 that the level of students’ involvement was different for each activity. Throughout the music-SD lessons in all schools, although there were still some students who expressed little interest in working with others, a large number of children in the classrooms were deeply involved in collaborative learning most of the time. Mr. Campbell (School A) explained that ‘because they do not want to listen to me, they like finding friends to talk about things and do it.’ For example, in School A, almost all students rehearsed the rap – ‘Together We Can’, and performed it and their own raps with great enthusiasm, especially the boys (see Figure 5.7). A lot of boys sang the raps loudly and passionately, and some of them performed with Hip-Hop hand gestures. During another group’s performance, several boys spontaneously danced the ‘horse riding dance’ from the song video – ‘Gangnam Style’ (see Figure 5.8). As Mr. Campbell said, ‘they all get surprised by different people and different groups.’

Figure 5.7: The scenes of student's interactions in School A's classroom



Figure 5.8: The scenes of boys' extemporaneous dances in School A's classroom



In School D, even though a number of students found it hard to throw themselves into their composition work for a long period of time, the great majority of them were involved in the other group-based work, including creating instruments, performing and the exchange of experiences (see Figure 5.9). Once the groups were formed, students quickly plunged into the discussion, and a few of them asked to use computers on their own initiative, to get more ideas on how to creatively make musical instruments by using the limited recycled materials they brought. The group activities appeared to make students' classroom learning more interesting and increase the participation of students in the music-SD lessons. At the end of each lesson, each group of students performed to the class, and the majority of students showed interest in and made an effort for their own junk band performance. 'Even the kids, who have few interests in music, are fully engaged in the group performance. Because the activity is implicitly competitive, although there was no prize, they become active and excited about it.', said Mr. Morsi.

Figure 5.9: The scenes of student's interactions in School D's classroom



Due to a classroom discipline problem in School C, the level of students' engagement in collaborative activities was lower than the other three schools. While most students in the class showed interest in completing the brainstorming and the lyrics writing with partners in the first lesson, a few of the students often chatted with other students or randomly played other SD-unrelated pieces of music they liked on the keyboards during the composition practice. Also, several noisy boys sometimes disturbed the class. However, participating in the group-work activities changed some students' attitudes towards learning. For instance, one girl, who always seemed absent-minded and misbehaved in the lessons, shouted at other noisy boys in the lessons, discussed with her partner, wrote a lot of words and lyrics intently, and finally successfully completed and performed her composition works with partner. It was Mr. Davis's (School C) viewpoint that 'when the kids talked about sustainability with their classmates, they had passion for the discussion and get more involved in'. Figure 5.10 shows a pair of students, who stayed focused on their composition tasks throughout the whole unit.

Figure 5.10: The scene of student's interactions in School C's classroom



Apart from the learning content and pedagogy, which Mr. Wilson considered to be two important influences on children's interaction in the classrooms, an individual's role in students' learning and the importance of the relationship among collaborators within the

group and peer interaction has been emphasised by a number of researchers (e.g. Gayford, 2009; Pancer & Pratt, 1999; Webb, 1982). Webb (1982) has pointed out that 'interaction can best be predicted from multiple characteristics of the individual, group, and setting' (p.421). Moreover, positive relationships among co-workers is recognised as a means to promote effective functioning of student work groups (Pancer & Pratt, 1999). As Gayford (2009) stated, collaboration more naturally takes place within friendship groups. Working in this kind of group would greatly stimulate a fair amount of participants' initiatives, which facilitates the production of desired outcomes in alternative ways. In this research, while some students expressed their love for working with partners or in groups during the post-teaching interviews, some of the other students seemed to be not enthusiastic about paired or group work in the classrooms. The students, who formed a group or pairs with their good friends, quickly engaged in their learning work and seemingly enjoyed the cooperation. On the other hand, the students' interaction activities play a role in motivating participants to build friendships and practising their skills of getting along with others. For example, one girl in School A said,

'We are divided into different groups, so we have different classmates in different lessons. Actually, I didn't know someone else a lot, except my best friend. I don't have other friends in this school. In other lessons, we also have discussion, but in a short time. In music, not only discussion, and the time is longer, so we have a lot of time to get to know each other.....we have become friends now.'

From young people's perspectives, friendship is viewed as 'a valued end in itself', and forming friendships and getting opportunities to have fun together have been identified by them as intrinsic rewards for participation (Gayford, 2009 p.5).

After the teaching intervention work in each school, feedback concerning group-based and pair-based work was received from some students and music teachers. Both teachers in Schools A and D thought students enjoyed this kind of work as a result of the teaching intervention, and perceived the work as a good opportunity for students to be 'able to do something altogether as a group', since 'before they work individually' (Mr. Morsi, School D). Mr. Campbell (School A) further elaborated:

'We certainly live in a computer driven generation and technology driven generation. To a lot of these kids, they are stimulated by things like X-box, you know, all risk computer games and so on so forth. So the opportunity to sit down and actually discuss things, I think, for a few of them, was very few and difficult, maybe for more than a few, for typically boys.....I think on the whole, the majority enjoyed the opportunity. Not to have pens all the time, but work with others in practical and verbal format. Er, I think they enjoyed that quite a bit.'

Additionally, some students spontaneously mentioned the experiences of group working on questionnaires as well as during interviews. Apart from the boy who complained about his partner's reticent manner, none of the other students expressed their dissatisfaction with this style of learning. During the students' post-teaching group interviews in School D, when they were asked to talk about what they remembered most in the music-SD unit, around one quarter of students mentioned group working. Students' related comments made during interviews and daily discussions are selected and listed in Box 5.2.

Box 5.2: Perspectives of students on group working

Boy (School A): *'We got on well within the group, and I think in the class, everybody worked together well.'*

Boy (School B): *'It (discussing with partner) is a good thing. We are thinking together and doing the work by ourselves.'*

Boy (School C): *'I like working with someone, because working alone is boring.'*

Girl (School D): *'Personally, I remember team-work organization, because everybody listened to each other and worked together as team, no arguments, and everybody added all the ideas in. We cooperated nicely and made very perfect performance.'*

Boy (School D): *'I like creating a junk band, because our teamwork as a group was fantastic, and we have made a lot of fun and really good sound of music. Exciting!'*

5.3.3 Student-lesson interaction

Students' feelings about a particular task and classroom activity 'determines the level of effort they put in it' and 'their attainment' (Vasileiou, 2002 p.12). How students feel and respond to teaching interventions is directly influenced by the teaching style and the teaching content within the lessons, and the students' activities in the classrooms are

generally aligned to the objectives and outcomes of the course (Struthers, 1994). This is one of the main reasons that Altun (2005) strongly recommends to meet the needs of students by designing classroom activities with different styles of learning. In this project, the four music teachers combined two types of subject matter knowledge – music and SD with the appropriate pedagogical skills, in order to deliver enjoyable, challenging and effective sets of learning experiences in their lessons. There was evidence that most of participating children were often engaged fully and actively in the learning activities, such as listening, watching videos, thinking, communicating, collaborating and presenting. Moreover, as discussed in the previous sections, a number of highly motivated students from Schools A, C and D showed more initiative in seeking learning assistance. They found out more ways of accessing SD-related information to support their learning activities, which included asking for advice from adults and the use of the internet. The students' verbal and non-verbal responses to a series of teaching strategies that their music teacher used and to the whole music-SD intervention are illustrated respectively below.

5.3.3.1 Students' responses to the teaching strategies

At the end of the research in each school, students expressed their feelings about the various classroom activities they participated in both verbal and written forms. Apart from the discussions during post-teaching interviews, all students also conveyed their attitudes towards the variety of activities through scoring on a Likert scale on the post intervention questionnaires details of which can be found in Appendix 16. From the data presented, similarities can be identified among students' feelings and perspectives towards the classroom activities in the four schools' music-SD lessons. Data indicated that students apparently prefer learning SD in a practical, musical and entertaining way, such as through performing, rehearsing, composing, singing, making instruments and watching musical videos, rather than in a purely oral or written form, such as discussion and writing work. In the following paragraphs, how students interacted with, and their perspectives on the learning activities in the classrooms are discussed.

- **Practical learning activities**

Mr. Wilson (School B) noted that 'students enjoyed the practical task'. For example, throughout the 3-weeks lessons in School C, one boy made a strong impression on me. The boy was widely regarded as one of the students, who always disrespects the teacher and disrupts the music lessons. However, when he sat in front of the keyboard, he became unusually quiet and intent. His ability to learn music and his musical knowledge and skills were weaker than most of the other students in the class, and he often modestly asked me for help and practised on the keyboard in earnest.

From Appendix 16, it can be seen that composition was students' favourite classroom activity in Schools B and C. To take School B as an example, around 6 out of 27 students seemed to be reluctant to practise on the keyboards. One girl talked about the reason that she did not like composition at all, and the only thing with regard to music she liked was listening. In contrast, the majority of students actively participated in the composition. When all the students were asked in the group interviews about the activity they liked best, four of them mentioned looking at and discussing pictures, and all others talked about composition. 'I like computer. Because you can pick like the sound on the keyboard, move it to the computer, and then make new sounds out of this. I like that', said one boy, and another boy shouted excitedly, 'we can make and put it on Youtube'. Another two students expressed their feelings towards their first experience of composition:

'We never play our own music, we never compose music on our own. So that was the first time, that's pretty good. That made me excited.'

'We got to like make, because we never. Most of the time we learned to play songs that have already been made. We got to make like, it's like our independent work.'

One boy, who was quite disruptive most of the time, when he sat in front of the computer, soon abandoned inappropriate behaviours and devoted himself to the composition work, which was particularly surprising to Mr. Wilson:

'In terms of the application to the tasks, I think as soon as they (students) got to the keyboards, they were a little bit more engaged, because they are expecting

music to be practical. So I think there was greater engagement in the practical music things.'

The data obtained from School D demonstrated that students were likely to be attracted to the hands-on activities, such as creating junk musical instruments, practicing and performing, rather than the conventional and more sedentary classroom activities of learning, for instance, reading, discussions and watching non-musical videos. In the music-SD lessons, each student brought junk from home to create their own musical instrument. The junk instruments were continually developed throughout the process of practising for the Junk Band performance, which most students thought it was a good experience. As one girl explained, 'because we can learn how to make instruments and stuff, I had never done that before.....It's fun to make our own thing, like instruments, by ourselves. Because at home, I haven't thought about using some waste materials to make something new'. 'It's a good experience', one boy continued, 'because it helps to show the impact you have. If you do one thing, it makes difference, rather than doing nothing, you would feel what you are doing is meaningful and you would be happy to do that.'

- **Visual learning activities**

Visual learning was one of the activities that most attracted students in the music classrooms, except in School D. Firstly, the impressive images and pieces of music could help students focus on the learning content immediately. For instance, at the outset of the unit in School A, Mr. Campbell introduced SD by showing a set of images which recorded a series of unsustainable problems on today's earth. Once the pictures came into their view, a lot of students seemed to be excited, and some of them exclaimed what they saw and how they felt from the images, which led to a subsequent reminder from Mr. Campbell to keep quiet. Students frequently uttered sounds of shock and surprise throughout the exercise, after which they eagerly discussed with the teacher about the issues that the pictures indicated.

These students were also deeply involved in watching musical videos, which could be used to help students visualise concepts, in the music classrooms. In School A, to take one moment in the 2nd lesson as an example, when the majority of students focused on a short film on SD, their emotions and behaviours were easily affected by its content and the musical accompaniment. They sometimes laughed, sometimes stared at the screen with an anxious expression, sometimes talked about the episode with the other students in a low tone, sometimes hummed the tune, and sometimes repeated some words to themselves. After the film, one student signed, 'Oh, it's finished'. 'Yes. You are disappointed?', Mr. Campbell asked, and then almost all students replied, 'Yeah'. As Mr. Campbell stated, 'we used film-based musical resources more than usual that was attractive to most students. It (videos) meets the needs of students who learn best by seeing and hearing content'. During the post-teaching group interview with students which took place two weeks after Mr. Campbell completed the teaching intervention, some students still remembered and could narrate the content of videos, as well as could sing part of the background songs. At the same time, they frequently used words like 'catchy' and 'fun' to describe the experience of watching these musical videos. One student expressed his feeling that '(videos) make more fun. We watched things like on computer and Youtube, so was making it more interesting, more fun for us.' In School C, the students' interests in the learning content appeared to be effectively aroused by musical videos as well. I observed that almost every student sat there and stared at the screen, except three to four boys each time who chatted or were in a 'trance'. Mr. Davis noticed that 'they watched the film resources without disruption.....enjoyed the music video in the start and were able to discuss key aspects of the musical content'.

However, due to the theoretical and non-musical content and length of the videos in School D, these non-musical videos seemingly failed to play a role in attracting students' attentions. In the course of watching videos, all students stared at the screen quietly and attentively at first, and after around two to five minutes, an average of one third of students started to yawn, gaze around the classroom or become dazed. Some students' offered explanations as follows:

'The videos were very lengthy and boring. So I didn't enjoy that much. It needs to be short.' – One boy

'The videos were based on the adult, (and have) too much technical language. We just in Year 7 and can't understand this.' – One girl

'We need to know what we are doing. Some of the videos, they aren't really telling us what it is about. We want to get to the point.' – One boy

'Watching videos, they are so boring, and I don't understand anything. It doesn't help us. We just watch the videos, after that, we go to group, perform stuff.' – One boy

- **Conventional learning activities**

In terms of the classroom discussions on SD, while a number of students listened intently and engaged fully in the discussions, some students seemed to be more passive. In School A, a large number of students tend to exhibit excitement at the beginning of discussion, but showed lack of attention or boredom after fifteen to twenty minutes. There appeared to be a progressive decrease in students' zeal for the teacher-student discussions from the outset to the end of the unit. In School B, all students were fully engaged in the 'Card Sorting Task', whereas nearly half of them seemingly did not get involved in the paired discussion. Most of these students, who talked or did something else that had no relationship with the content of the lesson during the discussions, were boys. As one boy said, 'the task ('Card Sorting Task') looks like a game and is more interesting than talking or writing about it (SD)'.

There was a little controversy around the topic of classroom discussion which occurred in the process of students' interviews, especially in School B. A few of students verbally expressed their feelings towards the learning activity by using the words 'boring', 'not catchy', 'not exciting' and 'not fun', and complained that 'we talked about it (SD) too much' (School D) and 'I cannot understand and remember what he said, particularly the words he was talking about' (School B). In contrast, a boy in School B responded to the above comments by saying 'I think they were good. We both understood what Mr. Wilson was talking about, because he explained to us. So I disagree with him'. Moreover, a student in School A believed that 'it depends on who teaches and how much you already

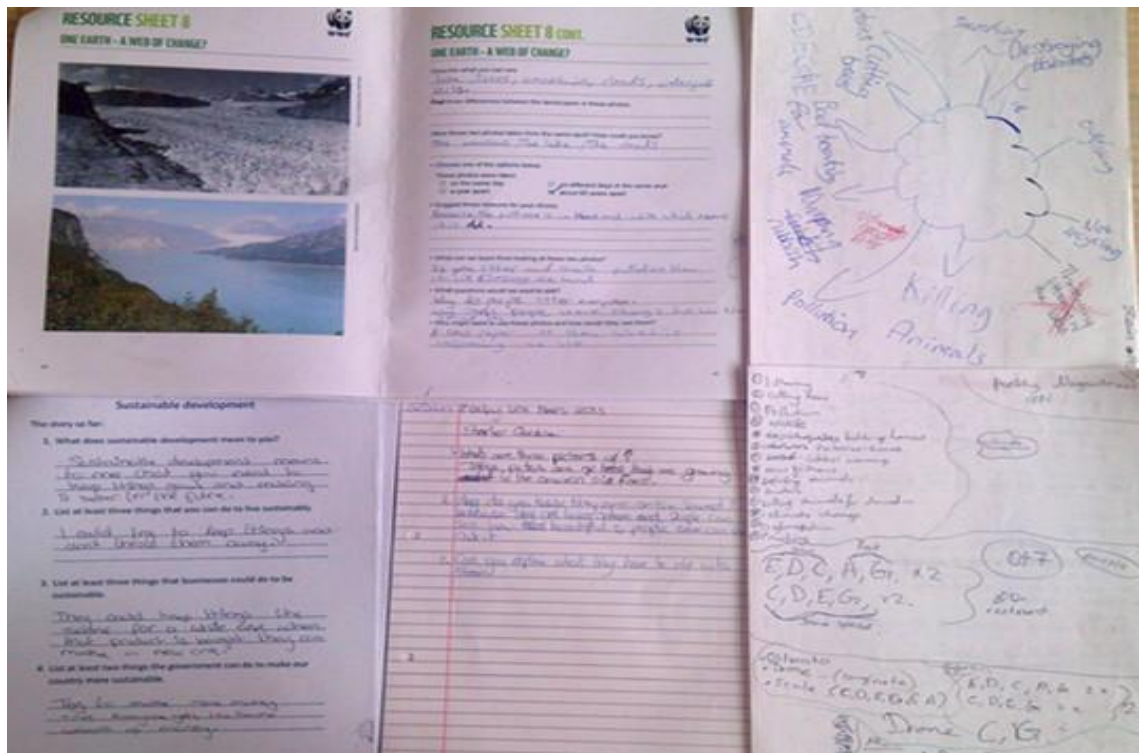
know'. 'Even if he did (spent too much time on talking about SD), it's ok. Because Mr. Campbell teaches us this kind of stuff in a fun way, it's like he compares them (sustainability and unsustainability) together', one girl added. The students from other schools also expressed dissenting opinions, for instance:

'I like the topic, because it is interesting and makes you remember stuff, and it's fun. My opinion on sustainable development is that it says, be sustainable can help you in life, so it's important to all of us.' – A boy, School B

'I think it is good, because you can remember the things through discussing, and when you played music, you can remember them even better. It's good for you.' – A boy, School C

'I like it, because it helps us learn more about what to do in the future.' – A girl, School D

Figure 5.11: The amount of paperwork in School B's classrooms



As can be seen in Appendix 16, paperwork was one of students' least favourite learning activities in Schools B and C's music classrooms. The amount of paperwork in School B was more than the other three schools (see Figure 5.11 above). In School B, apart from the brainstorming session, the students were asked to complete some Q&A practices

with a partner and a quiz independently. A minority of students distractedly completed these tasks and relied on their partner's help. They could not understand the reason for doing writing work in music lessons:

'I think some people should do, but there is no point in doing this. In music, you must make a music.' – One boy

'It's like you expect to do something else, like you want to go to the keyboard, but not. Seldom want to do the paperwork.' – One girl

In School D's intervention, one of the ways in which students gained direct access to the knowledge and information on SD was by reading, which is regarded as a technique of traditional transmission instruction by Ravitz, Becker & Wong (2000). As Mr. Morsi elaborated, the idea of reading texts was inspired by the learning style in university, in where usually provides students with lectures, and was carried out for increasing students' participation and engagement and improving their learning. He stated that

'When the students read it, then everyone else, as well as that person who read it, is gaining information from the person's reading. It's a different method, rather than a teacher led listen, so students participate.'

The strategy was also used in Mr. Morsi's normal music lessons, and he felt that 'they responded as they did with any other lessons'. However, from students' responses on questionnaires and from interviews, no more than one fourth of students showed their fond affection for the activity. While these students considered 'it was very interesting' as they 'learned some new points', contrary views appeared, and the words, like 'boring', 'lengthy' and 'same', frequently came out during the interview discussions around this topic. The viewpoints of some students were as follows:

'The texts in all lessons mean the same thing, but in different words. We didn't really listen.' – One girl

'I hate reading text, because it's boring.....We didn't get to know a lot from text.'
– One boy

Although most students participated in the learning activity passively, which is opposite to Dewey's (2001) viewpoint on learners' active participation for social transformation (see

Section 2.3.1.1), some of them still could remember and described briefly the content of partial texts during interviews. What they learned with regard to SD through these will be clarified in the next chapter.

5.3.3.2 Students' responses to the whole unit

5.3.3.2.1 How did students respond to the lessons?

In Schools A and D, nearly all students engaged enthusiastically in the music-SD lessons most of the time, and some of them were quite interested in the learning activities. Mr. Campbell commented that 'students were positive in every respect'. In School A, most of the students listened intently to the instructions, and 'the rap music enthused all to participate fully in the practical aspects of the lesson', in Mr. Campbell's words. From Mr. Campbell's written description with regard to how students interacted with the activities on his evaluation forms,

'Students engaged enthusiastically from the outset and keen to exhibit their performance skills. Most had remembered the rap from the previous lesson and only required a brief reminder.....Most engaged enthusiastically in the lyric-writing session, however a few required additional support to create their lyrical ideas.....They left the lesson with very positive attitudes and looking forward to the next lesson.'

The music-SD lessons in School D were designed to keep the same format as Mr. Morsi's normal music lessons, so that it was easy and familiar for students to grasp. Therefore, it was seen by Mr. Morsi that the students behaved and acted exactly the same as they did in the other music lessons. Moreover, students' enthusiasm for the participation of the learning activities varied in the classroom. Mr. Morsi supposed that 'some people in the classroom might be enthusiastic, because they have a lot of confidence, and you know, some don't, because they suffer from self-esteem, and things like that.' As a consequence, Mr. Morsi perceived that a lot of students sometimes seemed to be excited, while others became passive. He explained during post-teaching interview that 'children vary each day. People vary each day. They can be very enthusiastic in a particular class. So sometimes they are enthusiastic, sometimes they are not.' There are a series of factors which contribute to how students behaved and

physically responded to the teaching in the classroom, such as the learning environment, students' interest and attitudes towards different activities, the relationship between participants (both students and teacher), and the incidents before or during lessons (Vasileiou, 2002). Students' psychological factor, which tends to be easily influenced by their feelings towards the teaching strategies, could be viewed as one of the determinate factors in students' level of initiative in their participation (Su, 2013; Vasileiou, 2002).

In School B's music classrooms, while a number of students responded quite well to the music teaching, several students were engaging in off-task behaviours. Mr. Wilson evaluated that 'I thought students' engagement was pretty good, not outstanding but pretty good'. Although the students had been informed what they would learn in the intervention, in the first lesson, when Mr. Wilson introduced the concept of SD and organised paired discussions around the topic, there was a surprised, puzzled and reluctant expression on most of students' faces. Almost all students felt bewildered about the meaning of SD, and the whole class showed an expectation of learning music. In the process of the first paired discussion, more than one student asked Mr. Wilson 'why do we should do that?' and 'why we doing this in music?', and one boy impatiently asked 'will we play keyboards today?'. A student explained after the lesson that 'the question (regarding SD) the teacher asked was a bit confusing, because at first, I didn't know why we were learning about it in music instead of Geography.' Mr. Wilson also mentioned the unusual behaviours of students during the post-teaching interview:

'In the first lesson to begin with, the whole class struggled. I thought there was a period (of time) within the class they couldn't get their heads around what was happened. I think for the students, I think they just generally struggled with the fact what was the two different things combine.....I thought, ok, this is because we are doing something different, and they can't cope with that.'

As he explained, he had anticipated it before teaching, which was the reason for the subsequent explanations on what and why they are studying and the links between SD and music to students. Once students moved into the next stage of music learning, 'their behaviours became relatively normal', in Mr. Wilson's words. As the music-SD lessons progressed, an increasing number of students gradually accepted and adapted to the

new cross-curricular teaching style, but there were still a small number of students who struggled with that. The great majority of these students were boys, and they often chatted with other students without Mr. Wilson's permission or did something else which was unrelated to their learning tasks. Mr. Wilson expounded his feeling and guessed as to these students' behaviours that:

'That was an interesting one. Er, in terms of behavior, some of them were fantastic, and some of them were quite off task.....In the normal, there were three or four boys who were quite disruptive and not focused, and they were just same in the (music-SD) lessons.....At the beginning, I thought they were more disruptive than they were in the lessons before.....But when I got back to the normal music lesson in this week, some of them were still quite disruptive. I think we just got to that point in the end of year, so you know, the kids and I were quite tired compared to the first six weeks of last term and the first term, and some of the boys just become a bit silly. I don't think it was linked to the work, I think it just linked to the students.....But I'm not sure, because of the different stuff that they were learning, and I think the overall concept of sustainable development might have been a bit tough.'

Moreover, girls seemed to be more interested in and enjoyed the SD learning activities compared to boys. The possible reason that Mr. Wilson speculated was that 'you got some girls are growing up at that stage, and they are more aware of the things outside themselves'.

In School C, the students' initial responses to the slight change in the music teaching were similar to how the School B's students behaved when they were involved in the first discussion concerning SD. As Mr. Davis stated after the first lesson,

'I thought I wasn't anticipating is what I thought they might be more interested. I was surprised when I was telling them what the lesson is about, I was surprised how negative they were. I wasn't expecting that, I thought they found that was really interesting.'

In spite of the fact that all students have agreed to participate in the music-SD classroom teaching experiment, when they heard the objectives of SD learning that Mr. Davis introduced at the beginning of the first lesson, some students made a disappointed sound. One boy said, 'oh, boring, why do we learn this?'. However, with the gradual

incorporation of students' SD learning and music learning in the classroom, most of students seemingly began to enjoy the lesson. Mr. Davis's feeling is identical with my observations. He found out that 'I think when they are actually doing SD in the music, they are enjoying it.....Apart from the behaviour of some of the students, they responded well to the lesson content.'

In School C's classroom, students' interacted with the lesson in different ways. More than half the students responded well to the teaching. 'They didn't talk, enjoyed the listening and the different learning tasks. The really good students liked to think and ask questions, and put their hands up then give the answers', said Mr. Davis. He described these students as 'nice students'. On the contrary, several students seemed to have difficulty in concentrating on the learning content, and misbehaved in the lessons. Other students described these students' behaviours in and out of the classroom, for instance:

'They were crazy, especially boys. Like if one person say something loudly, then the others were crazy.' – One boy

'In this lesson, they keep on talking, because that's what they like to do.' – One girl

'They shout and always laugh down.' – One boy

The girl who sat next to me in one lesson talked about some students' misbehaviours with a helpless expression and tone. She and the students, who expressed the above opinions, revealed that these noisy students behaved similarly in the normal music lessons and in other lessons, so it was not a rare phenomenon. Mr. Davis also thought their behaviours were similar to and even a little bit better than their normal lessons. He further elaborated his point of view that 'I think over the time.....they enjoyed it more, and they behaved better'.

5.3.3.2.2 Did students successfully complete the learning tasks?

The lesson objectives, particularly in terms of music learning, were seemingly achieved by most students. Mr. Campbell used one sentence – 'they did a good job' to evaluate students' performances overall. Students rehearsed and performed the 'Together We

Can' rap with the use of appropriate performance techniques and 'stylistics characteristics'; they brainstormed their own lyrical ideas (see Figure 5.12) and shaped these into a typical verse and chorus structure (see Appendix 17); investigated a range of accompaniment options, mainly preset drum beats on their music workstations to help them shape their lyrics; and 'deliberated over key musical elements in their raps trying to get a message across: simple accompaniment, regular beat, use of repeated lyrics, use of structure to highlight lyrics (ie the chorus)', in Mr. Campbell's words. By the end of the 6th lesson, all students had completed their composition work and performances. As Mr. Campbell evaluated, the 'final performances were, in most cases, successful and the students were able to meet their target levels'. Individual students' talents were manifested from their composition works as well as performances. For example, three boys as a group borrowed a music idea from 'Gangnam Style', which was a famous South Korea's pop song at that time, to create a piece of work, called 'Nature Style'. The rap was very impressive and surprised Mr. Campbell. Figure 5.13 and Appendix 17 show their lyrics and the picture of their performances. The content of the lyrics can be found in the next chapter.

Figure 5.12: The selected groups/pairs' draft of brainstorming in School A

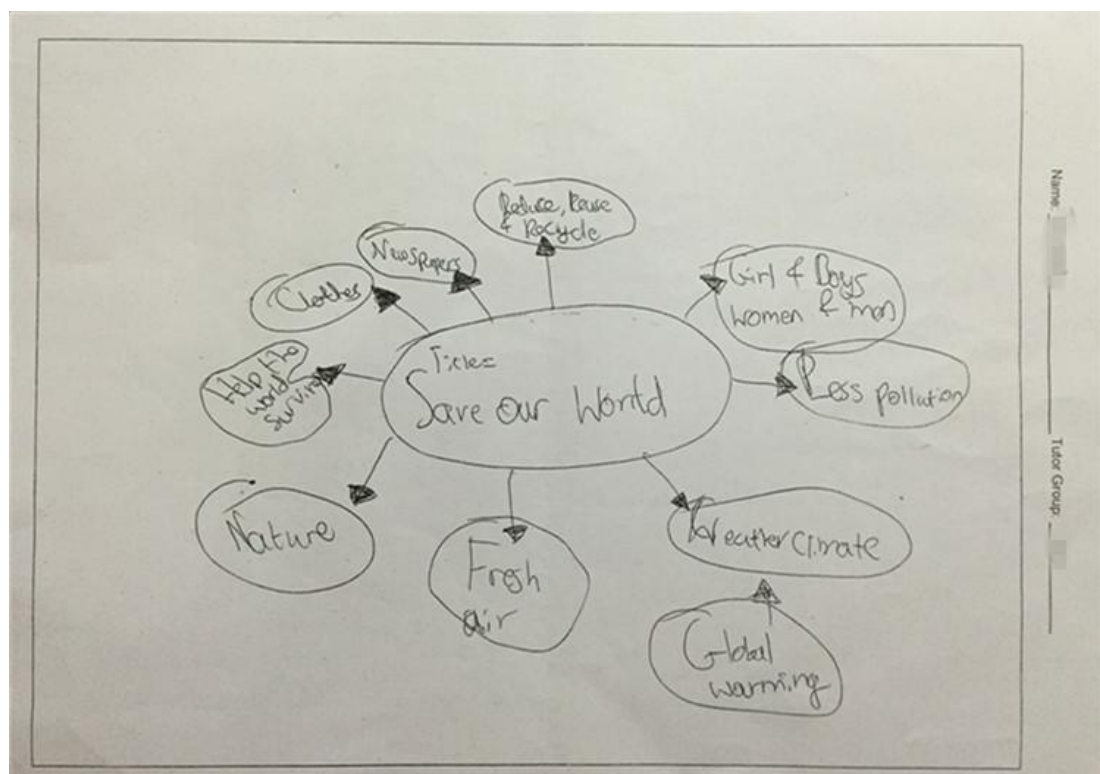
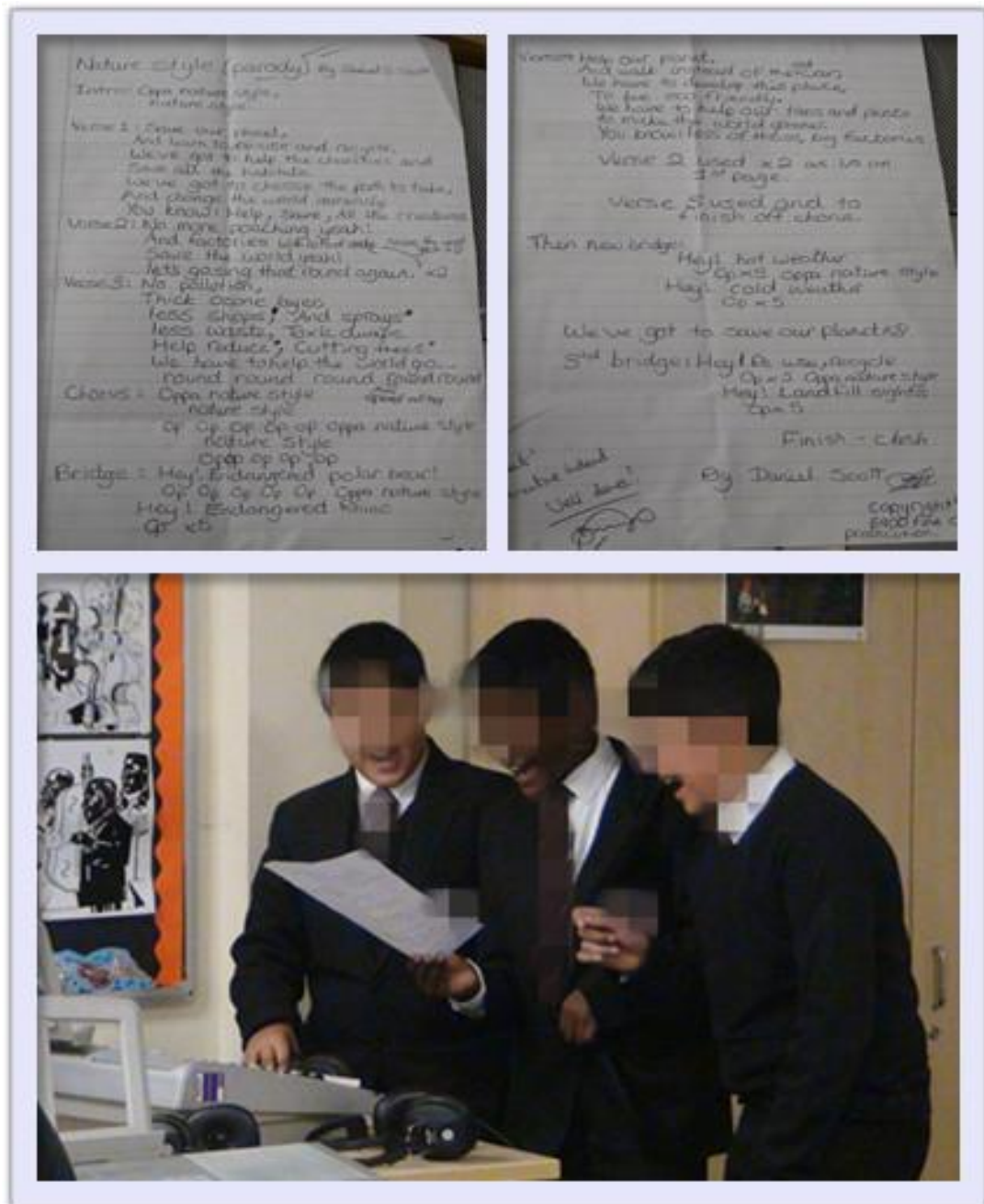


Figure 5.13: The lyrics paper for 'Nature Style' and the picture of related performance



In School B, 'most of the students achieved the learning objectives on quite a basic level', as Mr. Wilson evaluated. Firstly, through the participation of a range of activities, such as discussions, paperwork, a card sorting task and oral assessment, the students apparently developed their understanding of SD from knowing nothing about it to having the ability to explain it, although a number of them did so only 'on a very kind of surface level', in Mr. Wilson's words. During interviewing, when students were asked to talk about what they remembered most, SD was mentioned more often than soundtrack, piano,

pictures and Q&A. These changes in students' SD-related knowledge, attitudes and behaviours will be discussed and identified in more detail in the next chapter. In terms of their music learning, the majority of pairs completed their composition works accordance with Mr. Wilson's requirements. From a short self-evaluation that the students noted on post-teaching questionnaires, more than half of them were satisfied with their music-composition works. In Mr. Wilson's view, most students understood the musical features, such as 'the concept of using only certain notes of pentatonic scale' and 'the concept of drone', 'the idea of combining different notes together to create melody' and 'the idea of using a stimulus to create something'. He was surprised at some students' strong composition ability.

A few students did not work well with the soundtrack work, especially on the computers, since they didn't follow Mr. Wilson's instructions for composition. In School B's lessons, all students were required to soundtrack two pairs of comparing and contrasting pictures to create two pieces of music. Due to the obvious contrast between the two pictures in each pair, different mood should be expressed in different parts of music by using different tunes. However, some students just composed the music styles they liked, which did not fit the pictures. For example, one South Asian girl composed a melody on the computer with a unique Indian music style, and it was hard to find an obvious relationship between the melody and the pictures, and to distinguish the emotional changes of melody within different musical phrases. I asked her whether she thought about the pictures while she was composing. She answered, 'No. To be honest, I just compose.....I don't know how to do that.' The other three students, who also didn't create SD-related music on the computer at times, offered their own explanations in the process of interviews:

'I found it was hard to fit music in the pictures, because I was not familiar with any, like noises, like sounds in the software.' – One boy

'I played music according to the pictures, but most of the time I didn't like think about the picture thing, just play on it.' – One girl

'I understood what I need to do, but the problem was I can't cope with it. So I just randomly pressed notes which made quite a good sound!' – One boy

In the meantime, the majority of students created their pieces of music in consideration of the content of different pictures. Some of them elaborated their process of music-composition during group interviews, as well as noting it on post-teaching questionnaires:

'I was just looking at it, and if the picture is good, then I made like the notes lighter, if it is bad, like polluted and is destroyed, then I used the deep notes, so sounds like sad, because it is bad. I didn't use the like good ones at the end, because they had to be different, we had to do that in each picture.' – One boy

'One person looked at the picture, and one person played. Person looked at the picture see if it is matched the picture or wrong.' – One boy

'I think when we looked at the pictures and made the music, and listened to the sounds to see what was appropriate. Both would sound different, because one looks very nice, and other one was like darks.' – One boy

Moreover, Mr. Wilson tried to compare students' achievement with other Year 7 students, and he felt that their achievement 'was probably over average standard', although these students still seemed to be confused about the way of connecting composition with pictures:

'It's the first main composition they have done in that year. Based on what I know past Year 7 classes, I would say the other classes are struggle with it (composition) as well at this stage.....I think it is quite a big task for Year 7s, having thought of looked back on it, I think it is expecting a lot.'

In terms of the learning objectives, the students in School C achieved the objectives at different levels. For these students, the learning objectives for SD were gradually achieved in the process of discussions, watching videos, brainstorming, writing lyrics, music composition and performances, which will be further discussed in the next chapter. Their achievement of music learning objectives can be demonstrated by their own songs or raps. Some students performed a chord pattern which used both major and minor chords along with their singing, some of them were able to write two verses and a chorus in their composition work, and some of them used a drum beat from the keyboard to help

keep the pulse when performing. At the same time, a small number of students used a chord pattern which didn't quite fit the mood, the timing of some students' lyrics didn't match the tempo of the chord pattern, and the piano part in several students' works was too improvised. Most students created a rap and played chords, and very few students had melodies. As a result, Mr. Davis concluded that 'I don't think a lot of them really understand the melody part.....Some students didn't fully understand some of the instructions relating to melodic writing'. It was observed that many students appeared to be confused about the chords-first approach to songwriting during practicing on the keyboards. In spite of this, Mr. Davis considered that 'some of their composition were a lot better than I thought that they were going to be', and a number of students' performances impressed him during the final assessment session:

'I was surprised that some of the quiet girls, I thought wouldn't want to perform out loud, and they did, and some of them, they were not rapping, and also singing quite clearly and loudly, when I thought they would be very shy and don't want to do it, which was good. Er, some of them use the backing track on the keyboards, and that wasn't something I mentioned, so they did that by themselves, they thought of using the drums on the keyboards by themselves.'

At the end of the unit, five students did not complete their composition work or participate in the final assessment session, all of whom were the 'noisy boys'. One boy explained that 'I don't want to do it. Every lesson I should do the same thing, it gets boring, and then I get tired of doing it.' As described by other students, 'they always don't do work' not only in the normal music lessons, but also in other subject lessons. 'In the other lessons, for example, in Science, partly like 80 percent of the time, they don't actually do the work.....Because like bored, they are lazy. They don't like it. They don't really care about it.', one girl said.

In School D, all of the students in each group completed their learning tasks with their music teacher's compliments. Mr. Morsi evaluated that

'Their performance was good and was exactly what I expected, which is they made instruments, they have done the performances, they used repetition and added things like dynamics, pitch and tempo, what they could and things like that

(into their rhythmic composition work).....So, the assessment levels they got were exactly what I thought it would be’.

For most of students, it was their first time to work with junk instruments. It can be seen from Figure 5.14 that containers, bottles, sticks, pencils, iron strings, wrapping paper, cardboard cylinder, rice, grain, spoons, wooden fry spoons, pot and forks were brought from students’ homes, and the majority of students made shakers and drums, which were likely to be the easiest way to make instrument. The students’ ideas of creating their own instruments came from various places, such as websites, videos, movies and parents. One boy, who made a shaker with one bottle containing rice, described his experiences as follows:

‘I made like a drum and a shaker. I did it because we just finished the drinks, and then I just thought the bottles when I wanted to throw away, and like after two seconds, I thought I can use it for music.....The idea was inspired by watching the videos in music and like of seeing something that’s made of bottles, so I just made it.’

There are two types of instruments that surprised both the music teacher and the other students: ‘guitars’ and a ‘trumpet’, which looked like a rocket (see Figure 5.14). Compared to most students who put rice or pebbles in bottles to make shakers, the idea of creating the two types of instruments was considered to be ‘very good and very inspiring for some of the other students’ by Mr. Morsi. The girl who made a ‘trumpet’ was invited to show her instrument to the whole class with excitement, as well as to describe how the idea came up and the experience of making it:

‘I researched online, and I found mixed bottles, and you can blow through it and make a really big sound. Then I tried that at home, it did make a big sound. I brought that in the first week, and Mr. Morsi said it was really good, but then said I can do better, so I did. And I found this could accompany for a rap, so I try to blow for it. After that, I found a bottle, I put it inside, then as I was blowing, it really made a big noise, and I decorated it.’

Figure 5.14: Students' junk musical instruments in School D



5.3.3.2.3 Which lesson did students prefer, the music-SD lesson or the normal lesson?

ESD is perceived as a driving force for innovation in education and learning. With a change in the content of teaching and learning, pedagogy is evolved simultaneously (UNESCO, 2012a). From students' perspectives, they 'did something different' (student, School A) in the intervention, compared with the normal music lessons, not only in the aspect of SD learning, but also in respect of music learning. In School A, apart from the fact that 'we did much about sustainability', 'there are more videos' and 'we learned singing' during the 7 weeks, three students said. As they described, they only learn piano in the normal lessons. In the previous lessons, they 'had all the notes and already knew how to play before practice', whereas in this unit, they had to make their own raps and 'figure out how to play them on the piano'. They also needed the confidence to perform to other people, which was perceived as a fun learning experience by some students. For

School B's students, while they used to learn music by singing and playing a song or a piece of melody on the keyboards, the participation in the teaching intervention was the first time for them to access composition. The most significant differences students noticed between the music-SD lessons and the normal ones were adding the content of SD and the decrease of the learning time for musical practical tasks. At the same time, four students thought the two types of lessons were similar. 'We still make music, and we just make it on different subject', one student said. There were both similarities and differences between the two lessons in School D as well. According to students' description and the classroom observation in one normal Year 7 music lesson, common to the two types of lessons was the fact that 'we learned the elements of music, learned how to play instruments and perform them', and 'we also watched videos and read text in the music lessons before', in two students' words. On the other hand, the differences that the students mentioned were the additional learning of SD and the instruments. As one girl pointed out, the music-SD lessons connected recycling with interesting things. They used household items to make their own instruments with their imaginations and to make a performance, rather than using the instruments the teacher gave them as would be done normally.

The great majority of students in Schools A, C and D expressed enthusiasm for the SD unit. In School A, the music-SD lessons were perceived to be more fun than the normal music lessons, since 'we got to learn pop music'; 'we got to make our own lyrics and music, and did everything by ourselves'; and 'with the rapping, it allows you to express your feelings and feel free like what kinds of message you want to get and send, rather than having a same task'. Mr. Campbell made it clear that 'I provide opportunities for them to learn in different ways and respond in positive ways verbally, and otherwise they opt out'. The great majority of students in School C were more keen on the engagement with the SD learning experiences than their normal music classes. It was a little surprising that even the students who always made noises and didn't follow Mr. Davis's instructions in the classroom, also held the same viewpoints. One boy said, 'I got a C grade because I talked too much. But the lesson is good.' It was seen by the participating students that the normal lessons, which included music listening, playing music on the

keyboards and more written work about musical theory and knowledge, was less fun than the unit of SD, which had more videos and practical music. The following representative perspectives were obtained from two students:

'That was very fun, because we can do different kinds of stuff, like, we learned to play the keyboards, we had to make our music and the rap and use creativity and anything on that which is fun, and we sang a song about the environment, about the whole world, and about like people in different countries were suffering.' – One girl

'I knew a few things about music before I went to the class. I knew like simple stuff. But when the theme (SD) was coming to music, I learned a lot of stuff, like sustainability and how to write lyrics, and then how to make music stuff like the music videos.' – One boy

Students' different attitudes towards the two types of music lesson were discovered by Mr. Davis during the teaching. At the end of the project he said that 'I think these lessons they prefer better, because it (the teaching intervention) was good. I think most of them found it was quite interesting, and they like writing a song'. In School D, while Mr. Morsi considered that 'not lot of them (students) have a massive interest in sustainable development and recycling things to make junk instruments', the 6-lesson scheme of work 'was good for them for an experience'. However, most students showed their enjoyment of the experiences of recycling and reusing materials to make and play new instruments, exemplified by these comments:

'Because we never did it in primary, and, er, we got to reuse materials that we never used before. And we go online to see what instruments we can make. It's very fun to make and play our own instruments, and that's fun (to) listen to the sounds we recycled.' – One girl

'I prefer the new things. Before the six weeks, the normal lessons, I felt quite bored. Because all we done is normal stuff, like any kind of music lesson. But now we got the 6 weeks, we got an opportunity to make new stuff out of old things. It became much more like creative and imaginative.' – One boy

'They all made different instruments, all made like different sounds. So sounded very nice with different sounds. So, you know, how to make different stuff with different materials, yeah, that was interesting.' – One girl

'The lesson is more fun and more interesting. We could learn something, because we didn't even know about recycling, and I got to know how I can recycle and make new instruments, that stuff.' – One girl

In comparison with the other three schools, in School B, nearly half the students expressed their preferences for the previous lessons and described the music-SD one as 'boring', 'terrible' and 'strange' during group interviews, and manifested much willingness to 'learn more stuff about music' in their music lessons. Meanwhile, several students were neutral in this argument. As one student argued, 'that's ok, because when we talked about SD, the environment, we were learning how to compose music which is like a big part of music at the same time.' In addition to these, the fresh attempt in music classrooms left a positive impression on the other students. The points of view from two girls are selected and presented here as examples:

'We've got pictures, and it's not like just learning the notes, you can make your own music. We get to do what we want and play our own music, and then show it to others. (Researcher: Do you want to do this again in your future lessons?) Yeah. It's fun.' – One girl

'I find it's fun because I wanted to know how SD goes with music, and at the end, we all understand what it means.' – One girl

5.3.3.2.4 How did students respond to the future music-SD lessons?

At the end of the project in each school, suggestions for how the music-SD lessons could be improved provided by some students. They wished to 'work in bigger groups', learn more facts about SD, have more time to learn music, especially to practice and rehearse, record their own musical works, and use more audio and visual resources for inspiration and examples. The students in School B expressed their opinions during interviews, for example:

'I love listening to music. I think listening to different types of music or songs about environment would be helpful to our music-composition.' – One boy

'He (Mr. Wilson) didn't have videos. If he did the videos, I think that would be better. Because when I compose music, it would give me some ideas.' – One girl

'If we can record our songs and everything, listen to them, and share them with my friends, that would be the best. It's fun to show everyone my piece of music'
 – One girl

Moreover, a number of students expressed their willingness to join in this kind of classroom learning in the future. Some students in School D hoped that they could have more lessons on junk music with less time for learning SD. As one girl argued, 'it was a bit too long on sustainable development, because it is only one topic. Because like we understood like after four weeks, like what it is about, so in the next two weeks, it could do something else in it.' Moreover, one boy suggested that Mr. Morsi offer more suitable learning content on SD, which could give him more ideas for the next learning task – junk musical instrument making.

5.3.4 Teacher-lesson interaction

The music teachers in the four schools seemed to have more enthusiasm about teaching in the first few weeks. In the last two or three lessons, sometimes they showed less passion and more exhaustion in the classrooms, especially the music teachers in Schools B, C and D. Mr. Davis and Mr. Morsi explained that

'What I found is, with all my scheme of works I plan, I always seem to, I think the first couple lessons are always the best lessons. Because you do everything fresh, it's all new things. I think after that, it's hard to find new ways of building on things.....and you were just using the same sort of techniques again.' – Mr. Davis (School C)

'The first lesson I think was very good, er, because there was something new and exciting, and then, er, over time, it starts, er, you know, it gets a little bit boring. Because we were doing the same thing, and things like that. So, er, I think the first lesson was very good, and I think after that it starts going slightly down hill.' – Mr. Morsi (School D)

At the same time, all music teachers shared their reflections on the teaching intervention work with me during the post-teaching interview. Their thoughts on the teaching and learning processes within the music-SD lessons are organised and discussed respectively below.

5.3.4.1 School A

When the music teacher reflected on the seven-weeks experiences in the classroom, he realized that 'integrating SD into the current practices and established plans is probably more beneficial to everybody', and 'using a rap as a musical starting point' enables most students to generate their lyrics/material with regard to syllabic rhythm quite quickly'. The mix of SD film resources, music videos and collaborative group work, which were employed by Mr. Campbell as stimuli for discussions and composition, were considered as successful to 'remain engaging and exciting for the students', in Mr. Campbell's words. He expounded that

'Maybe not as many kids as I perceived had an opportunity to discuss SD related topics and so on so forth. Actually, getting them here as a group and stimulating them with maybe a video or something helped them to discuss openly. I think that was quite successful.'

As he stated, when he reflected on the unit, particularly looking back at the teaching methods used, he thought it would be better to introduce more teaching methods for ensuring the success of all students at the final outcome, for example, providing more support to particular students and an opportunity for students to perform publicly, and dividing students into more working groups:

'If I would do it again, maybe integrate some other aspects into that.....maybe some additional teaching methods to make sure that all the students will be successful at the final rap, you know, in terms of the confidence, in terms of the using English, etc., all terms of organizing and performing their lyrics confidently.....I definitely think, there is a number of students said they needed more, even more support and challenge, you know, help with actually realising their ideas and performing them confidently. So I think, you know, engaging and supporting target students even more might be my focus, and also maybe, you know, providing an opportunity for them to perform their ideas, er, in front of the year group at an assembly or something, so maybe that would be more stimulus for the large group to be successful on the outcome in the end. Maybe, dividing into such more groups might be a good idea where those students might be engaged more fully and be more confident and comfortable with other people.'

5.3.4.2 School B

The music teacher in School B found six-week music lessons had 'quite good concept ideas in there, and there were some quite good activities in there'. He felt satisfied with the scaffolding for the composition, which gave students the basic musical features, and the short practical tasks for the SD learning, such as the card sorting task. In the research, Mr. Wilson was challenged to find links and the way he 'tied them together'. He found that he spent much time to find out how to get around that. 'I couldn't figure it out in the time I had', he continued, 'so in terms sort of my planning for the unit, I probably need to spend more time'. When he reflected on the whole teaching intervention, he had the feeling that the weakness of the lessons was the insufficient achievement of a real synthesis between the learning of SD and music, the idea of which had excited him at first and subsequently he struggled with:

'I think what I need is trying to do better and more intrinsically in what I was teaching.....What I would choose to do next time is, rather than just change the massive target I give to each, I need to actually look at how I combine the two things (the learning of music and SD).....Because I spent about fifteen minutes doing sustainable development. What I need to look at is something we do sixty minutes doing music with sustainable development, and they somehow really need to be combined completely.'

Moreover, in terms of the music learning, Mr. Wilson thought changing 'a kind of the basic layer of how I taught' and providing a wide variety of practical musical tasks' would be better, which means that not only learning with two compositions, but also trying to do something else, such as 'more performances' and 'listening'. After all, it was emphasised by him that 'getting the kids interested and engaged in something is really important'.

5.3.4.3 School C

Mr. Davis enjoyed the content of the lessons, and in his opinion, the teaching strategy he employed particularly successfully was listening to different pieces of music that already existed, which gave many students an 'idea of what a song or a rap about sustainable development would sound like'. Student's initial learning experience about what SD is also provided Mr. Davis with a sense of accomplishment, because a positive change in students' understandings of SD, which he discovered in the process of communication

with them. However, Mr. Davis was very disappointed at the students' behaviours in the music classroom. The need for improving students' behaviours and then ensuring the engagement of all students was mentioned by Mr. Davis on his evaluation forms three times, and he pointed out at the end of the project that 'if it was with a more able class, students would behave better, and then they would be ok'.

In the process of teaching, the teacher appeared to meet a problem in getting the balance right between the teaching of SD and music:

'It was hard to know how much I should do for each. I think I got the balance is ok, but it's not easy getting the balance right. Er, because some of them didn't know anything (about SD), when we first started. So I have to explain something in more detail. It took longer than I planned for. So then there was less time to do with music, which is why in the later lessons, there was a lot more music that try to catch up some of the time they have lost.'

However, Mr. Wilson seemingly didn't view this 'problem' as significant, since more time that he spent on the discussions about SD appeared to directly contribute to students' understanding of SD issues. As Mr. Wilson described during the conversation after the first lesson and in the post-teaching interview, 'what I thought is they would know about solar panels and solar energy, so yeah, it's alright, it's a good day, because now they know, they are learning about it.'; 'I was happy that by the end they all seem to understand what it (SD) was.'

According to students' responses to the learning content and a variety of learning tasks in the classroom, it was seen by Mr. Davis that the musical part, especially the learning regarding chord patterns and writing a piece of melody for their lyrics, was too hard for many students:

'They probably need the whole lesson just on chords to understand what it was, because they haven't really done much on chords before.....and many of them can't do the melody part.'

It was the reason why he believed that the music-SD lessons would be more successful with a simpler content of music learning. As he argued, if he implemented the teaching

practice again, he would made the learning content more differentiated, which means that different students with different abilities would work with the suitable levels of learning tasks, and the lyrics and rap would be stressed in the process of teaching musical things. He said,

'Maybe, what I aimed for was a little bit too high for their ability.....On reflection, if I'm going to do again, I'd probably stick to how to write a rap. And in that way, they don't have to worry about melody.....What I would change is I would simplify it, yeah, I would focus more on the lyrics, so they would use the lyrics and then learn about it musically. I use the lyrics to build on their understanding of dynamics, tempo and rhythm. Er, I would then get them to use the backing drumbeats, and then...I will get them to develop their performance skills, they can rap or they can sing in time with the drums.'

Moreover, two other ideas for future music-SD lessons were put forwarded by Mr. Davis. Firstly, he considered that the content of SD was consistent with students' abilities and interests and appropriately supported students' learning. Therefore, everything he did about SD in the lessons would be kept when he undertakes the same teaching work for the second time. The only thing he would change is the way of teaching it. Mr. Davis stated that

'I could find more practical ways of doing it, like, I could come up with some word games, which use sustainable development things, then that could be a practical way of doing it'.

5.3.4.4 School D

The teaching in the School D's music-SD lessons was considered to be 'good' by Mr. Morsi. According to what he talked about during interviews, he followed the same format as he followed with other lessons, which was manifested in the fact that both lesson types had the theory and practical sides and then the theory was applied into students' practice. He thought it worked quite well, because the students were familiar with the same format. Mr. Morsi appeared to be well content with the practical side of the lessons, which he commented was 'very successful', rather than the theory side. Mr. Morsi described students' learning experiences on theories as 'terrible', because 'it was very difficult for them to take all this information and then process it. So sometimes, in the

recap in the end of lesson, some of them couldn't answer the questions, because it was difficult for them.', which coincides with students' feelings for the learning content of SD.

Mr. Morsi faced difficulties in teaching the theoretical content in the lessons, even though he had got the teaching experience of students' junk band and 'personally was very comfortable with the being able to do it'. Mr. Morsi described that

'I didn't know anything about sustainable development, so sometimes, it was a bit beyond me..... with the school before, we didn't talk about it, we just made junk instruments.....I only learned it a week before or the day before in some cases. Er, I mean I only know as much as what I told the kids. So, yeah, of course, it was difficult.....it's like try to teach Spanish, I don't know Spanish. It's the first time I'm teaching it, so I can only keep the discussions going to a point where I can, er, keeping it will able to answer questions. Anything beyond that, then I'll be going into territory where I have no knowledge of it.....So, for actually both myself and them (students), it was very difficult learning experience, but very challenging one.'

As a result, Mr. Morsi perceived that familiarising himself a bit more with SD, 'trying to put it into context and manageable chunks rather than giving students a whole set of information', and seeking advice from other people who have experienced the cross-curricular project with regard to SD, were necessary for the improvement of the present lessons.

5.3.4.5 The continuation of music teachers' ESD work

Although there were some flaws in the design of lessons and difficulties that music teachers met during teaching, all participating teachers indicated that they enjoyed the lessons, due to the challenge and fresh things that they worked with during the teaching.

They expressed their feelings as follows:

Mr. Campbell (School A): *'They were good and funny, and even sort of when you plan for them, when you learn new things from yourself, because I didn't know these things before. As a teacher, it's important to move forward. You always should learn new things in yourself. Even though I knew all the things to do with music, integrating, exploring and researching these new things relating to the world and the environment in music practice was interesting to me. Because,*

you know, there was a lot of stuff there, so that for me was exciting. And again, integrating new practice into what you do every day, yeah, I think that's good.'

Mr. Wilson (School B): *'I enjoy doing them, and I very much enjoy the challenge of trying to do all the things as well.....Er, so I think it's a really good idea.'*

Mr. Davis (School C): *'I mean it was a good experience for me. Because for me, it was something new in my classroom. I'm quite interested in teaching innovation, so I always try something new and try to make differences, as I like learning something new.'*

Mr. Morsi (School D): *'I think we (students and him) all quite enjoyed it. Er, just because there is something different. Usually we don't make instruments, and we got to play instruments, so the whole experience of being to create instruments is quite good, and is just a whole new learning spectrum for us.'*

In addition to this, the comments from all of them suggested a positive engagement with SD and a great possibility of taking the cross-curricular idea into their future lesson planning. For example, in School D, Mr. Morsi brought the idea of the junk band to a partnership primary school at the end of the teaching intervention work, when he joined in an assistant instruction programme. Throughout the six weeks, these students kept their eye on creating junk instruments and rehearsing for a public performance in School D's annual summer festival (see Figure 5.15).

Figure 5.15: A live performance of Junk Band in School D



5.4 Summary

In this chapter, the pedagogical links between the nature of music learning and the essential elements of SD have been demonstrated, and the findings from this study also suggest that the interrelations among students, music teachers and a series of music-SD activities in the classroom allows this kind of cross-curricular learning to take place. The music teachers in each sample school strove to seek the appropriate links between their own music curriculum and the scaffolding of knowledge, the development of positive attitudes and the acquisition of skills related to SD. Different methods for the connection of both disciplines were employed by the four music teachers: the teacher in the first school used 'rap', both teachers in the second and the third schools used 'composition' but with different teaching methods, and the fourth teacher organised 'Junk Bands' in his classroom. At the same time, a combination of teaching methods, such as discussions, audio and visual learning activities, co-operative work and brainstorming, were integrated in the lessons for the improvement of students' classroom interactions, which may have directly affected their perceptions and opinions about the relationships of participants as well as the music-SD lessons.

In the research, most of the students in each school, with common aims and goals, worked as mutually supportive learners, and the learning objectives towards SD provided them with opportunities to experience a range of different modes of learning, for instance, watching musical videos or short films in relation to SD, discussing SD issues, brainstorming, listening and singing SD raps and songs, writing lyrics and composing music around SD themes, and recycling, reusing, making and performing junk instruments. Among these activities, the evidence suggested that the majority of students seemed to prefer the practical classroom activities, which combined the learning of music and SD together, and the students in School A appeared to show more enthusiasm than the other three schools in the process of working on the learning tasks.

As Varda, Retrum and Kuenzi (2012) pointed out, the teaching methodology, how student interactions and the relationships they formed in the classroom may produce

some effects on students' learning experiences and outcomes. For examining the effectiveness and values of the cross-curriculum teaching work in the four schools, it is indispensable to pay close attention to the learning outcomes in terms of SD that students achieved. As a result of this, the next chapter will focus on the Research Question 2 – *'Can music play a transformative role in young people's knowledge, skills, attitudes and behaviours towards a sustainable model of development?'*

Chapter 6 Data Analysis and Discussion – The potential role of music learning in students’ future contributions towards Sustainable Development

RESEARCH QUESTION 2

2. Can music play a transformative role in young people’s knowledge, skills, attitudes and behaviours towards a sustainable model of development?

a) Which specific ESD outcomes, in terms of knowledge, skills, attitudes and behaviours, may be achieved through the medium of music classroom learning?

b) What are participants’ perceptions with regard to the relationship between music and sustainable development, and the potential role of music education in extending students’ learning in ESD?

6.1 Introduction

The purpose of the analysis and discussion in this chapter is to provide answers to Research Question 2, by examining the possibility of using music education to cultivate the abilities of the future citizens for a more sustainable world. The chapter is presented in two sections, which seek to answer the two sub-questions respectively. In Section 1, the qualitative and quantitative evidence of students’ music classroom learning in relation to the learning outcomes in SD is provided. In other words, the specific links are sought here between students’ participation in the music-SD lessons and the scaffolding of their knowledge and concepts, the acquisition of their skills, the development of their positive attitudes and the promotion of their positive behaviours. Section 2 pertains to the analysis of data from music teachers’ and students’ comments, which aims to find out the participants’ feelings and viewpoints on the relation between music and SD and between students’ learning of music and SD, as they are integrated in the music classroom. Here, the emphasis is mainly on participating students’ reflections on the effects of music learning on their own learning outcomes of SD.

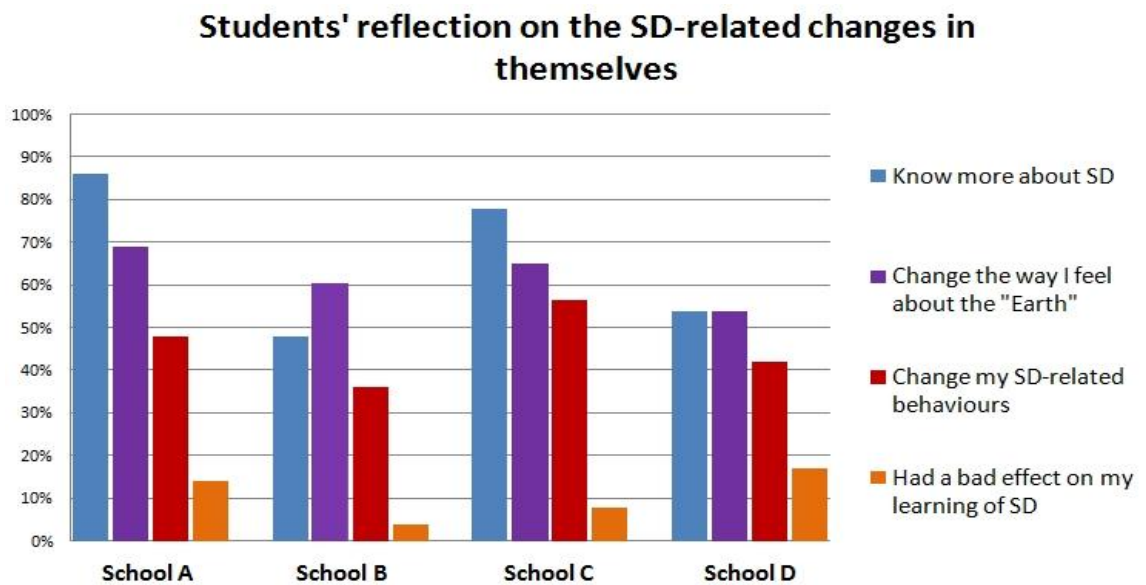
6.2 The achievement of students' ESD outcomes

The UK was expected to be 'a world leader in developing and deploying management and leadership capability for the 21st century', which means that in all sectors and at all levels, individuals would also be expected to have sufficient understanding, knowledge and skills to 'enable them to grasp the right opportunities and innovations for the UK in a rapidly changing and interconnected world of market-places, communications, and social and environmental challenges' (The Council for Excellence in Management and Leadership, 2002 p.5). However, too many citizens are currently still unable to have and develop knowledge, attitudes and skills for living sustainably (Piece, 2012). As a result, it is crucial to enhance these abilities for meeting economic, social and environmental challenges.

As discussed in the literature review (Section 2.3.3), education plays a vital role in developing citizens' knowledge, understanding, skills, positive attitudes, awareness and behaviours towards SD, which are conducive to the creation of a more sustainable future. In order to identify the contributions that music classroom education made towards students' SD learning, these essential elements of ESD (Education for Sustainable Development), as the possible outcomes that the participating students could achieve during the process of their involvement in their music-SD lessons, are separately discussed and examined here.

Figure 6.1 indicates the participating children's reflections on the effects that the teaching intervention brought about in their knowledge, understandings, feelings and behaviours towards SD. According to the data shown on the figure, which was collected from students' post-teaching questionnaires, the majority of students sensed positive SD-related changes in themselves, whereas the remainder held the opposite view that this kind of education mode negatively influenced in their study on SD. To increase the trustworthiness of the research results and avoid anecdotalism, which is typical of much ESD research (e.g. Rovira, 2000), the pre- and post-teaching research findings will be further analyzed qualitatively and quantitatively.

Figure 6.1:



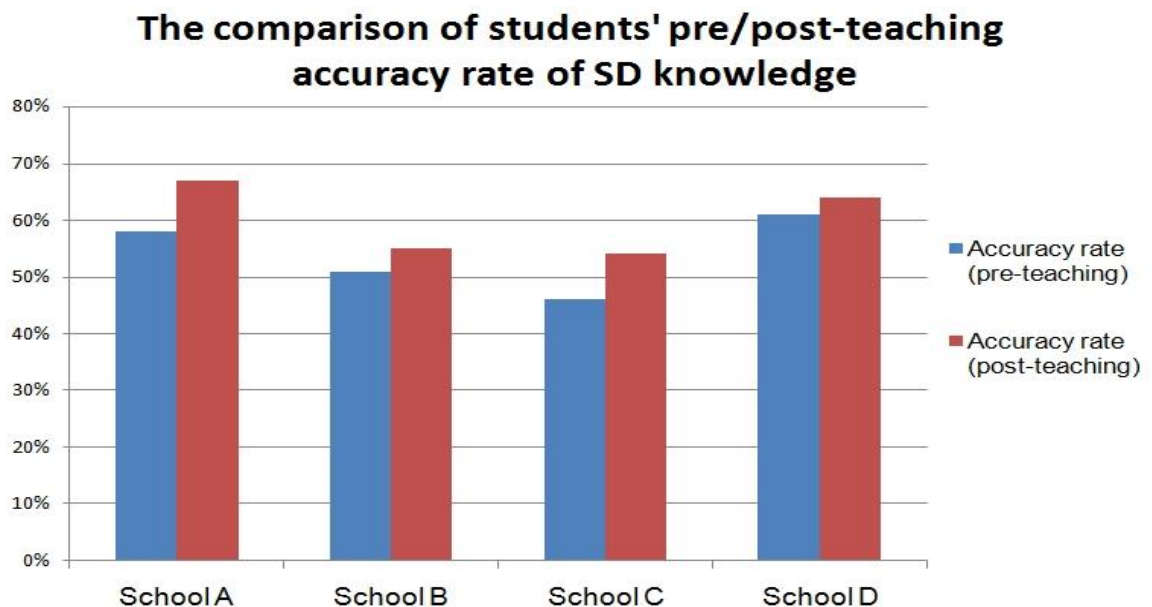
6.2.1 Knowledge and understanding

According to what has been discussed in the last chapter, some 'building blocks', such as giving initial information, watching videos, looking at pictures, exchanging ideas, brainstorming, paper work and practical learning tasks, were provided by the music teachers to facilitate students' own understandings of aspects of sustainability. There is substantial evidence from both qualitative and quantitative data that the time taken to be involved in a variety of learning activities during the music lessons not only allowed the students' knowledge and concepts of the SD issues to develop, but also helped students to construct their own meanings and understandings based on their classroom experiences.

An informal test with the same content of assessment was included in the students' pre-teaching and post-teaching questionnaires. The questionnaires required all students to approve or disapprove of twelve statements, which are concerned with the most common SD issues which were covered in each music teacher's lessons. The results are presented in Figure 6.2 below, which shows the slight change in students' overall level of understanding between pre-teaching and post-teaching periods and its differences among the four schools. The findings seem to support the students' self-reflective views, which were displayed in Figure 6.1, that there were improvements in students'

knowledge and understanding of issues related to SD over the period of the study. Moreover, it could be found from both figures that the students in Schools A and C, who were involved in two common learning activities – watching musical videos with regard to SD issues and writing lyrics, appeared to have improved their understandings a little more than the students in the other two schools, although the classroom discipline in School C' music lessons was disappointing to the music teacher at times.

Figure 6.2:



The definition of SD became a feature of learning for SD in this project. All four music teachers seemingly contributed well to the improvement of students' understandings of SD during the teaching intervention. According to the data collected through interviews, questionnaires and informal conversations, before the teaching, no students in Schools A, B and C knew what SD was. Some of them may have heard the words 'sustainable development' or 'sustainability' before, but none of them could express anything about it. In School D, although one fourth of students had heard of the concept of SD in primary school, most of them only described the meaning of SD with simple words, such as 'environment' and 'recycling', and relatively few of them could articulate it explicitly and completely. The findings suggested that by the end of the project in each school, an increasing number of students were well informed about the implicit meaning of 'sustainable development' (see Figure 6.3), and a number of them were able to construct

and develop their own meanings of this. From their own descriptions of the term of SD, it can be discovered that regardless of which school the students are from, the words 'world/planet/earth/environment', 'future', and 'the next generations' were frequently used to interpret the meaning of SD. The explanations they gave included:

'It means balance. Keep the world going around, improve the environment and live in a decent way for the next generations.' – Student in School A

'Sustainable development means that what we are doing now should be good for the future.' – Student in School B

'It means living the way we would like to without stopping future generations being able to do the same.' – Student in School B

'You do something, which won't create an impact on the environment.' – Student in School C

'It is about the earth and how to keep it safe and better to live in the future.' – Student in School C

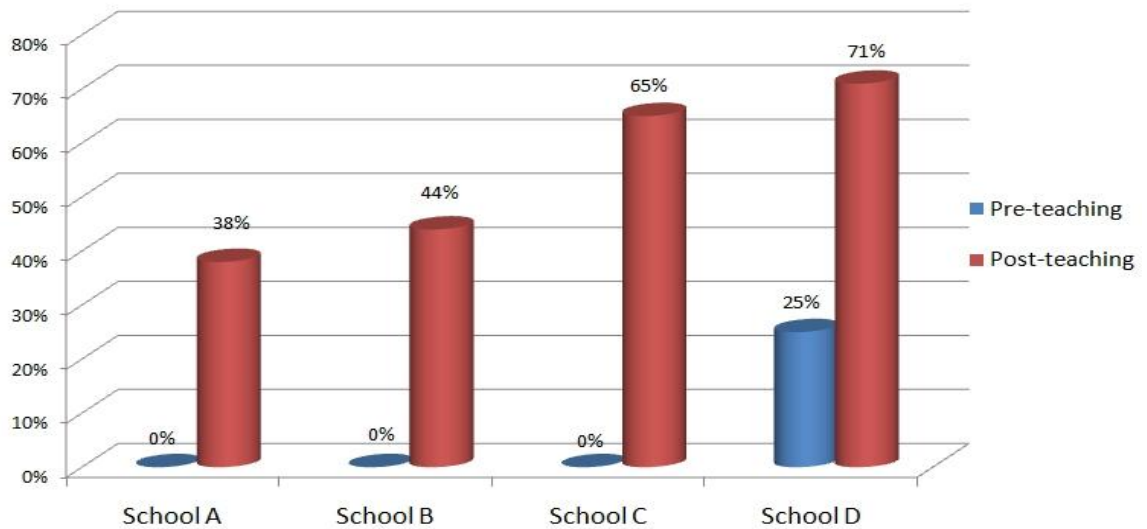
'Sustainable development to me, means keeping useful things, such as trees, fresh air and a healthy lifestyle for the generation ahead of us.' – Student in School D

'Make something can be continued and cannot ruin the world.' – Student in School D

Moreover, during classroom observations, the changes in students' understandings of the concept of SD can also be discovered through students' distinct responses to the learning content and learning tasks concerning the topics of SD. For example, as mentioned in Chapter 5, in School B, most of the students moved from being bewildered about the learning tasks regarding SD issues in the first lesson to being able to talk about the term in some detail by the end. 'When we first were assigned to think about what sustainability is, we cannot quite understand it.', said one student in School C, 'It was quite confusing. Now when we do, we understand more of it. We were watching videos, writing our lyrics and doing it.' During the post-teaching interview with Mr. Davis, he expressed his feelings that 'I was happy that by the end they all seem to understand what it was.'

Figure 6.3:

The comparison of the number of students who understand the meaning of SD in each school



Students in the four schools not only obtained the knowledge regarding what SD means, but also began to understand the reasons for and the ways to live sustainably, which would promote their positive attitudes, even behaviours, towards a sustainable earth (Jaus, 1982; Sa'di, 1997). After the teaching intervention, a lot of students and their music teachers agreed that these students had a better understanding of the present situation of the world and what happened around them – topics which they had often ignored before. As one girl in School C illustrated, 'we learned more about sustainability, because before we didn't really know what is going around in the world and how much we were like destroying the world, but now, because we had some music lessons, we found more.' A number of students in the four schools briefly explicated what they acquired from the lessons during interviews, for instance, two boys from School A and School C took SD issues regarding 'natural environment', 'air pollution' and 'gas' as examples to demonstrate their new understandings of SD:

'I learned more about sustainability and how the world is going around. Like, now there are more and more factories, cars in the world, and some people spend freely. These will affect the air, the natural environment and kill people's life. If people didn't realise that, then we wouldn't survive in the future.' – School A

'..... If you use gas, it would cause pollution, and then it would cause global warming. So it accelerates the environmental problems.' – School C

Moreover, the music-SD lessons also gave many students ideas of how they can ‘look after the world’ and ‘change the future’, in their words. For example, in School C, students had advanced knowledge of renewable and non-renewable energy and tried to distinguish the two types of energy. ‘We know what can stay forever and what can’t. So we can use the stuff forever first, and then the others later on in our lives’, said one boy.

The great majority of students created a more rational and overall appreciation of aspects of SD based on the development of their understandings with regard to the SD-related issues in the project. According to the feelings and views of the SD issues that students expressed during group interviews and on questionnaires, written exercises and their lyrics (see Appendix 17), most SD issues, which were covered in each school’s music-SD lessons, were remembered and well understood by students, whether during or after the teaching intervention (see Table 6.1). ‘I learned like what’s happening around us, like pollution, how this affected in the past and will affect in the future’, said one student in School B, ‘So we can try to make it better in the future, like walking instead of driving, recycling, not cut down trees.’ It was seen by Mr. Morsi that the students renewed their understanding of SD, rather than had a new understanding on that. ‘Now they can understand why, because they might have heard before, like recycling is good and they shouldn’t waste water.....But now they’ve got a better understanding of why and what it means.’, he added. The viewpoints of different schools’ students supported Mr. Morsi’s argument. ‘Recycling, it’s like, picking up your rubbish and placing it in the recycling bins.’ said one student in School A, ‘I knew a little of it before, but not as much as we know it now.’ A School B student stated that ‘before we used to know ‘everybody don’t harm nature’, but now we know much more. Because now we know what’s bad for the environment and we know what’s good for the environment.’ Another student in School D said,

‘Before I knew recycling and reusing are good, but I didn’t know much about why I should do that and what I can do. I actually used plastic stuff always and then threw away outside and didn’t separate them from other rubbish. Now I know we should put them into another bin for recycling, and we can reuse them, like put more juice in it, and like make instruments, so use them over and over again. It’s really important for reducing waste and pollution.’

There seems to be an expected phenomenon that the SD issues which impressed students most were directly influenced by the length of time their music teachers spent in the lessons. Due to the main learning content in Schools B and D's music classrooms, the issues of SD which emerged from the pictures that the students were required to soundtrack, and 'recycling' and 'reusing' were frequently mentioned by both schools' students. 'Energy', the issue which was discussed most in School C's lessons, was remembered by more than half of students. Moreover, in School A, many students blurted out 3 'Rs' together when I asked them about SD issues, and some of them spontaneously sang the song – 'Reuse, reduce, recycle', which was from a musical video played in their lessons, and seemed to be excited about the song.

Table 6.1: The comparison between which SD issues students expected and actually remembered through their learning within the music-SD lessons

	The SD issues mentioned in the music-SD lessons <i>(extracted from Table 5.12)</i>	The SD issues and topics remembered by students
School A	<ul style="list-style-type: none"> ● 3 aspects of SD – Society, Environment & Economy ● '3Rs' – Reduce, Reuse, Recycle ● Nature ● Global warming ● Disaster ● Animals ● Consuming ● Pollution ● Equality ● Poverty ● Water ● Energy 	<ul style="list-style-type: none"> ● 3 aspects of SD ● '3Rs' ● Nature & environment ● Animals ● Consuming ● Pollution ● Climate change (global warming) ● Energy ● Our world – why we should look after the world & how to help the world ● The importance of doing sustainably
School B	<ul style="list-style-type: none"> ● Environment ● '3Rs' ● The destruction of habitat & landscape ● Global warming ● Ecological footprint ● Energy ● Water ● Reforestation ● Pollution ● Walk don't drive ● Animals 	<ul style="list-style-type: none"> ● Nature & environment ● '3Rs' ● Deforestation ● Climate change (global warming) ● Pollution ● Animals & habitats ● Why & how to be environment friendly ● Why & how to save resources ● Why & how to develop sustainably for future generations

School C	<ul style="list-style-type: none"> ● Renewable energy ● Unsustainable problems (Global warming, Environmental and Traffic problem, etc.) ● Natural resources 	<ul style="list-style-type: none"> ● Energy – e.g. fossil fuels, coal & renewable energy ● Nature ● Pollution ● ‘3Rs’ ● How to keep earth healthy, save it and make it better ● How to prevent unsustainability
School D	<ul style="list-style-type: none"> ● 3 aspects of SD ● SD indicators ● ‘3Rs’ ● Air pollution ● Climate change ● Renewable energy 	<ul style="list-style-type: none"> ● ‘3Rs’ ● Energy – e.g. electricity & renewable energy ● Earth ● Traffic ● Climate change ● How we can contribute to SD

6.2.2 Skills

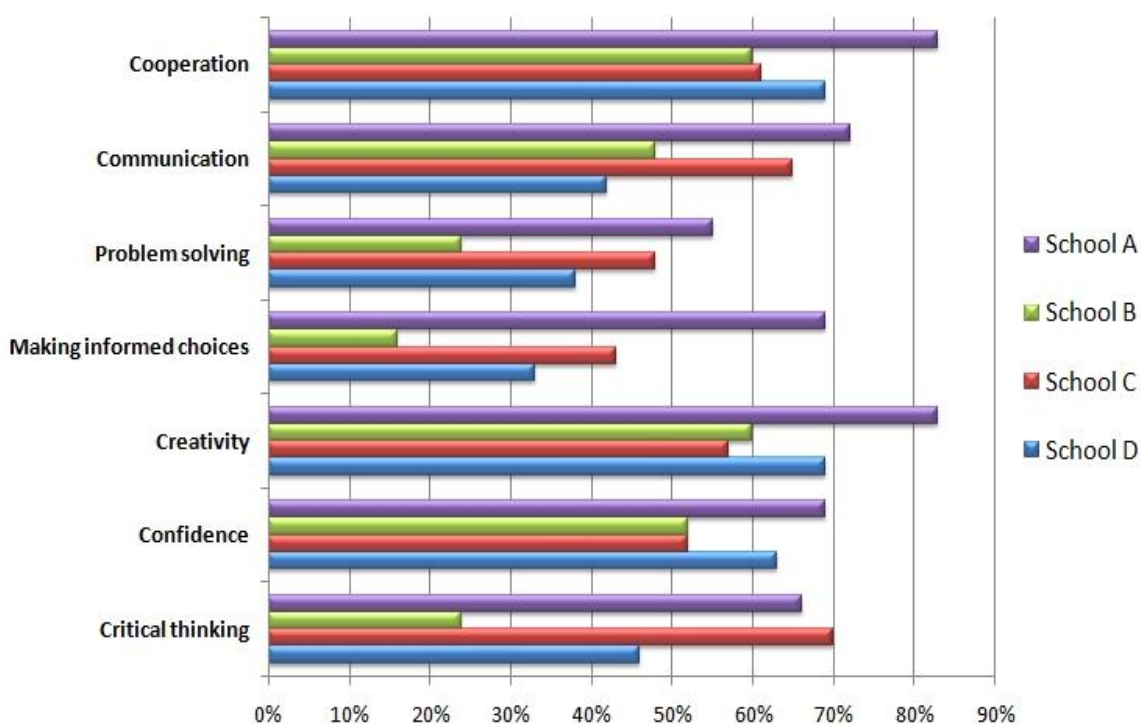
‘The ability to take steps towards building a more sustainable self, community, society and world requires far more than knowledge *about* sustainability’ (Stibbe & Luna, 2009 p.2) , and it also requires a variety of skills. Music education has the great possibility to empower students by developing transferable skills learned during their time spent studying music (Byrne & Sheridan, 2001). There was evidence to suggest that the music-SD lessons in all schools not only encouraged the students to explore more sustainable forms of consumption and existence, but also afforded them opportunities to practice and enhance a wide range of skills for future work and life, for example, in sustainability literacy, collaboration and cooperation, leadership, communication, problem solving, decision making, creativity, confidence and critical thinking. All of these skills are non-technical, but are the higher-order ones, which have been identified by UNESCO (2005d) as being necessary for engaging actively and successfully in a sustainable society and playing appropriate roles in the community to contribute to economic, environmental and social sustainability.

The qualitative findings, which are discussed in the following sub-sections, were corroborated by the students’ post-teaching self-evaluations on questionnaires (see Figure 6.4). According to the data presented in Figure 6.4, a number of students felt that

the skills listed in the figure, as a key component of action competence for SD (Laing and McNaughton, 2001), were improved throughout their participations in the SD-related music lessons, although the extent of improvement for each generic skill and for each student varied between the schools. Apparently, the students in School A had more confidence in their acquisition of SD skills than the other three schools, and the skills of cooperation, creativity and confidence, which were recognised by more than half of students in each school are the top three that were enhanced most effectively in the project. In the following sections, how the students in each school learned and developed each of these skills throughout the project will be discussed.

Figure 6.4:

Students' viewpoints on SD skills they learned through the music-SD lessons



6.2.2.1 Basic skill – sustainability literacy

The shortage of relevant skills are widely experienced in lots of countries' SD-related sectors, and basic skills, including sustainability literacy, are considered as an impactful factor in the development of their staff's ability to learn new skills and to upgrade existing skills (UNESCO, 2012c). As Piece (2012) argued, 'without these fundamentals, learners

have difficulty to access vocational learning and can never attain the level of skills that will enable them to make informed choices with regard to the life of work'. Therefore, as a basic skill, sustainability literacy undoubtedly should be acquired by each person.

In the project, students' level of sustainability literacy was improved through the participation in a series of classroom activities (see Table 6.2), such as discussions (e.g. on the meanings of professional jargon and terminology and SD issues), reading texts or lyrics and writing (e.g. writing lyrics, dictations, brainstorming and writing solutions). Due to the great majority of students' lack of knowledge about SD and some non-native English-speaking students' limited level of English language proficiency, at the outset of the project, many students didn't know the meaning of some SD-related terminology, such as the concept of SD, global warming, desertification and social inequality. Some of them were even not capable of pronouncing and spelling these terms correctly. The findings collected from classroom observations and students' pieces of written coursework suggested that most students in each school seemingly had made significant progress in their pronunciation of technical terms, oral expression of ideas regarding SD issues, and SD knowledge and understanding as examined in the last section. As School D's music-SD lessons didn't address any writing issue, it only can be argued that the students' spelling and writing skills were practised and developed in the other three schools. Moreover, following Stibbe and Luna (2009 p.2) suggestions, the term 'literacy' mentioned here in sustainability literacy stretches its literal use for examining whether person can or cannot read and write, and also refers to 'having skills in using language in particular ways'. The music-SD lessons in the four schools offered students opportunities to exercise environmental literacy verbally and in writing. For example, in order to appeal to people to pay more attention to unsustainable problems in the world and to make positive changes in themselves, the majority of students in Schools A and C acquired and exhibited their ability to compose lyrics (see Appendix 17), and many of School B's students discussed and attempted to make and write down their own suggestions to companies and government.

Table 6.2: The extent of contributions towards ‘Sustainability Literacy’ that each school’s music-SD lessons made

	School A	School B	School C	School D
Reading	√√	√	√	√√
Writing	√√	√	√√	N/A
Knowledge & Understanding	★★	★	★★	★
Using language in particular ways	<ul style="list-style-type: none"> ●Composition ●Communication 	<ul style="list-style-type: none"> ●Writing solutions ●Communication 	<ul style="list-style-type: none"> ●Composition ●Communication 	<ul style="list-style-type: none"> ●Communication
Learning activities towards SL	<ul style="list-style-type: none"> ●Discussions ●Reading lyrics ●Singing lyrics ●Writing lyrics ●Brainstorming ●Dictations 	<ul style="list-style-type: none"> ●Discussions ●Paperwork ●Brainstorming ●Card sorting task 	<ul style="list-style-type: none"> ●Discussions ●Writing lyrics ●Singing lyrics ●Brainstorming 	<ul style="list-style-type: none"> ●Discussions ●Reading texts

Note: The number of ‘√’ = the level of students’ participation.

The number of ‘★’ = the level of students’ achievement.

The more number of ‘√’ or ‘★’ the school has, the higher level of participation or achievement the students reached.

6.2.2.2 Collaboration, cooperation and leadership

Central to the pedagogy of both music and ESD, is the provision of opportunities for individuals’ collaborative and cooperative learning (Altun, 2005; McNaughton, 2008). Within the music-SD lessons in the four schools, students spent more than half the class time to practise the cooperative techniques through group-work and paired-work sessions. Collaboration and cooperation within a group under the teachers’ supervision, was a strategy used in much of the classroom activity, especially the musical activities (see Table 5.13), which required groups of students to perform together. At the beginning of involvement in the decision-making process (see 6.2.2.4), most students were keen to be engaged in the important and ‘exciting’ activity – group or paired work, in one boy’s words. Each student in one group in each school ‘gelled well’ and supported each other. They always began with discussions, and worked together to share ideas, cooperated to put ideas into practice and finally completed their learning tasks and presented their final works to the rest of the class. Most students’ high level of involvement in the collaborative activities was confirmed by all music teachers, who were in agreement that this helped to develop their skills in cooperation as well. The level of students’ engagement in the group

or paired work inevitably could affect their acquisition of collaborative and cooperative skills. It is indicated in Figure 6.4 that more than 60 percent of students in each school felt they improved in their cooperative skills, and Schools A and D's students, who generally participated more actively in the team-based activities (see Table 5.5), gained better outcomes in this respect.

There was evidence that the collaborative activities facilitated forming team consciousness and learning about how to work with other group members, including skills in compromising. Take one group of students in School A as an example: a dispute arose between one boy and two other boys when they rehearsed their own raps for the final performance. They argued about the division of tasks. After receiving the music teachers' suggestions and a period of time for further discussion, the problem appeared to be resolved as all of them engaged fully and enthusiastically in the final performance for assessment. According to Gayford (2009), it is advisable for students to support ideas with reasoned argument and use acceptable means to reach a final agreement. The competitive format of performance in Schools A and D further cultivated each group of students' team spirit and their sense of collective honour. It was found from students' facial expression and behaviours that almost all of them really cared about responses from other students and their music teacher's praise. Moreover, when students talked about their group-work or paired-work experiences, the words like 'we', 'us' and 'our' were used by many of them, which indicated a sense of inclusivity and collaboration (McNaughton, 2008). Meanwhile, the importance of each individual's contribution to the successful completion of learning tasks was recognised by many of them. For example, a girl in School D described that

'We found we worked better in a group. We talked together and put all our effort into it (learning task). It took us a long time to think and practise, but when we made a success of performance, how excited we are.....We co-operated well together, and each person's effort was indispensable. We enjoyed the experience.'

Leadership skills, which are considered to be essential to move forward to a state of sustainability for people's better life around the world (BITC, 2010; Gitsham, Gribben &

Hind, 2008; Timmer, Creech & Buckler, 2007), emerged in both the processes of cooperating with practical tasks and decision-making. These skills, including the ability to organize, motivate, accept alternative views, turn-taking, appreciate and reach a group agreement, were always developed among the students who showed more enthusiasm and initiative than others. In Mr. Campbell's opinion, the more mature students tended to automatically take a lead in a group. There was an interesting phenomenon which took place in each school's music classroom in that girls were more likely to be the conspicuous leaders in mixed-gender groups or pairs. It was particularly apparent in School D's lessons. During the practice sessions for junk band performance, while boys seemed to be more willing and good at contributing ideas and suggestions, in all groups, the person who was in charge of direction and arrangement was a girl.

6.2.2.3 Social skills – interpersonal communication

Communication is regarded as an instrument and a prerequisite of 'effective policy making and public participation', as well as one of the core mechanisms to support and promote the strategy of SD (OECD, 2001; GTZ, 2006 p.7). Communication within the music-SD lessons was face-to-face interpersonal communication and emerged through collaborative activities and all forms of discussions most of the time. Most communications were verbal. In the four schools, the lessons and the collaborative activities often began with verbal communication between teachers and students or among group members, and the participants tended to work for the common task and have goals they wished to achieve. There was evidence that the majority of students understood the need to communicate with others and to work as part of the class and group to pose questions, discuss, explain, challenge ideas, state their thoughts and opinions, and negotiate for reaching agreements. These essential skills were enhanced particularly for the students, who speak English as their second language. At the beginning of the group or paired work, these students appeared to be a little unwilling and unconfident when they communicated to someone else, which limited the effectiveness of discussions and the achievement of desired outcomes. For example, one boy in School A complained that 'when I was talking to my partner, we cannot talk too much. She didn't want to talk to me, so sometimes I just do my own thing.' However, as time

went by, most of them made positive changes not only in the proficiency in spoken English, but also in their attitudes towards group communication and the level of the involvement in the group or paired working. That might be the reason why the students' communication skills were seemingly developed better in Schools A and C (see Figure 6.4), which had more non-fluent speakers of English in the sample classes.

Apart from generic skills for interpersonal communication, the communicative experiences in the music lessons allowed the students to develop other social skills, which are also central to ESD (LTS, 2002). Firstly, according to the classroom observations, respect for others was evident throughout the lessons in which most students supported others' efforts and learning. This was shown by nodding, smiling, listening, initiating, allowing each to express ideas with enough time, extending each other's ideas, asking questions of each other, giving feedback to each other's ideas and suggestions in a suitable way. Moreover, students not only improved their basic conversational capacities, but also practised higher and more complex skills, for instance, resolving conflict, acceptance and building good relationships with partners or group members. This reinforced Altun's (2005) findings that music activities contributed to the social development of an individual. Each group/pair of students in each lesson discussed, explored, and cooperated to practise and perform together for a common goal, as well as making progress and feeling a sense of collective accomplishment. As a result, during all the post-teaching group interviews, a number of students commented that this kind of learning experience helped them to learn more about their group members and about the importance and strategies for improving relationships with others, which are crucial for successful collaborative working.

6.2.2.4 Problem solving and decision making

Problem solving is often suggested as a tool to help address a particular SD issue or concern (UNESCO, 2010; U.S.EPA, 2014). In the research project, the learning activities in each music classroom, particularly the collaborative ones, provided students with opportunities to practise and improve the relevant skills for the preparation of being effective problem solvers and then solving practical and real world problems in the future.

Whether composition or creating junk instruments, whether rehearsal or performance, in order to find solutions to problems arising from these practical activities, the students were required to think what should be done with the problem, and to speculate about possibilities, alternatives and outcomes by using their imagination. In regard to this issue, Mr. Davis expressed his viewpoint that:

'They (students) have to do problem-solving when they do composition. They have to try to think of the ways to make some music, and they have to solve some problems. They are composing in pairs, they probably meet some problems when they work together as teamwork, and sometimes, for example, they can't hear anything in the headphones, and they got to figure out why and they have to check the keyboards. That's a type of problem-solving.'

Furthermore, the students in School B were offered experiences of thinking independently, and of seeking and offering possible 'solutions' to local issues or problems that concern them. These 'solutions', which seem to be more appropriate to be described as 'suggestions', were sorted out and selected to be listed in Table 6.3 below.

Table 6.3: Some solutions to SD issues which were made by School B's students

Relevant issues	Suggestions to government	Suggestions to business
Environment	<ul style="list-style-type: none"> ●Don't cut trees, if necessary plant more trees every time you cut one to help the future environment. ●Grow more trees. ●Put more bins out and get more bin men weekly. 	<ul style="list-style-type: none"> ●Stop cutting down trees to make new buildings for their companies. ●Do not use too much paper. If you use lots of paper, replant trees.
Climate change	<ul style="list-style-type: none"> ●Make more buses instead of cars. ●Make all factories stop polluting. ●Stop selling cigarette. 	<ul style="list-style-type: none"> ●No pollution.
Biodiversity	N/A	<ul style="list-style-type: none"> ●Not ruin animals' habitats. ●Stop killing animals. ●Don't do animal testing.
Electricity	N/A	<ul style="list-style-type: none"> ●Open windows and not use electrical fans. ●Turn off the computer and light etc. when not in use.
Consumption	N/A	<ul style="list-style-type: none"> ●Not to waste materials. ●Reduce, reuse, recycle. ●Buy and use items that can be recycled.

Others	<ul style="list-style-type: none"> ●Make people live in a sustainable way. ●Make more strict rules. 	<ul style="list-style-type: none"> ●Be known as eco-friendly.
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As future citizens, who would assume responsibility for creating a sustainable future (UNESCO, 2005d), all students within the project were encouraged to experience the process of decision-making and develop the relevant skills when they undertook their learning tasks. Decision-making generally emerged by the end of collaboration and cooperation, communication and problem-solving, and a lot of students seemed to be willing to be involved in the process. In the lessons, these students thought freely, expressed their perspectives and views, and then attempted to synthesise different ideas and information to make their own choices. A girl in School D described this as ‘an important’ but ‘difficult’ task, since most of the time, she thought she needed to try to remain neutral to consider other people’s alternative ideas. She envisioned a lot of possible things and weighed up options before making her decision.

6.2.2.5 Other skills – creativity and confidence

Creativity, as the art of creating something new and worthwhile (Csikszentmihalyi & Abuhamdeh, 2004; Ouedraogo, 2013) and one of the aims of the curriculum in England (Sharp & Le MeTais, 2000), was placed at the heart of the teaching intervention programme. Its importance in inspiring people’s thinking and actions in sustainable development and making a difference for the ongoing development of sustainable societies is identified and emphasised by UNESCO (2014) and McKeown (2002). As one student argued, combining SD with music is a creative thing in itself in classroom learning. Moreover, music learning plays a role in enabling learners to become good creative thinkers (Byrne & Sheridan, 2001; Webster, 1990). The music-SD curriculum in each participating school enabled the students to think creatively and innovatively, whether they were composing, creating instruments, performing or listening to and appraising music. Take School D, in which all students in the school were encouraged to employ their imagination and creativity to be engaged in reusing and recycling, as an example. One student said:

'I prefer the new things what we were doing in the 6 weeks. I never knew I can do recycling in a so interesting way. And when I made my instrument, I tried to make my instrument being the special one and being different from others, so I think a lot. I think I become much more like creative, and imaginative than before.'

Students' creativity was more obviously shown in the learning outcomes in Schools A and D, including the composition works (School A) and the junk instruments and performances (School D). The data indicated in Figure 6.4 supports the findings from observation and confirms the improved development of both schools' students' creative skills. Although the students in School C also learned to compose a rap/song, the percentage of students who thought their creativity had been promoted was the lowest among the four schools. Several students with disruptive and non-participative behaviours in lessons might be the one of the reasons for the low percentage, and another reason may be the emphasis that the music teacher put on students' learning chord patterns before composition, since the 'Melody over a chord progression with a rhythmic template' activity often put limitation on the students' scope of being creative (Byrne and Sheridan, 2001 p.182).

Students' confidence in their abilities contributes to improve their performances and overcome difficulties. This confidence goes beyond how the students think about the specific learning tasks to their attitudes towards successfully take action for contributing to a more sustainable future. The OECD¹⁷ (2004 p.136) noted that students who are not confident of their ability to learn and to overcome difficulties, 'are exposed to failure, not only at school, but also in their adult lives'.

Within the teaching intervention programme in each school, students' confidence in thinking, presenting their ideas, solving problems, making decisions and mastering every learning task was gradually developed throughout their lessons. According to some students' responses, a great boost to their self-confidence was caused by teachers' or other students' praise, which always stimulated their feelings of accomplishment and

¹⁷ OECD: Organisation for Economic Co-operation and Development

satisfaction. In the process of creating and performing music, students tend to 'experience personal satisfaction and consequently gain confidence and self-esteem' (Vasileiou, 2002 p.192). As one student in School A described, 'doing composition well or performing well made me feel better about myself'. Moreover, Mr. Morsi and Hope-Brown (1981 cited in Altun, 2005) consider that working in groups played a certain role in the establishment of students' confidence in completing the tasks. 'I had no idea how to create a piece of music with the two pictures and how to use the software on computer, but luckily my partner helped me. We did complete all things together. That's great.' said one boy in School B. It is indicated in Figure 6.4 that more than half the students in each school felt a boost of their confidence after the learning intervention, and the lessons in Schools A and D, with more opportunities for students to show their work and perform and therefore gain others' comments, appeared to promote students' confidence more than the other two schools.

6.2.3 Awareness and attitudes

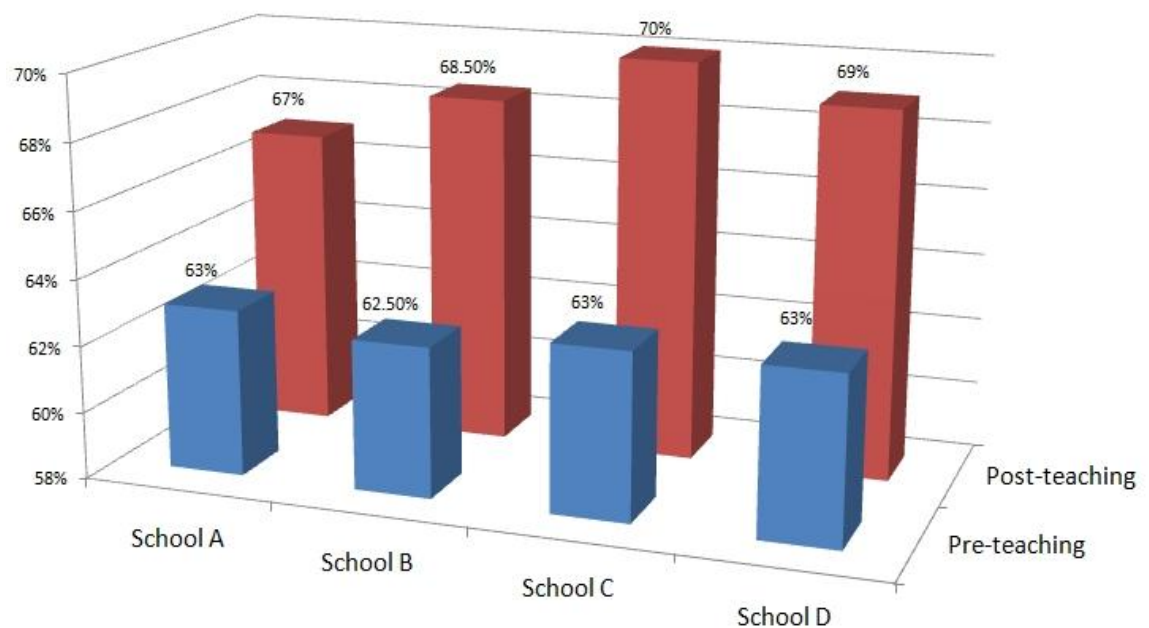
The knowledge and skills of SD 'need to be underpinned by the critical reflection on attitudes and values that is at the heart of ESD' (UNESCO, 2012c p.4). The limited literature (e.g. Anon, 2008; Gurevitz, 2000; Luo, 1999) has highlighted the tremendous possibilities that music has for creating awareness and for developing young people's positive attitudes of promoting sustainable development, though there appears to be no conclusive evidence so far in the literature. In this work, the research findings from secondary students' questionnaires and the interviews identified the fact that these students not only obtain the knowledge concerning SD, but also were forming their attitudes and active concern for the earth.

Firstly, an increasing number of students seemingly began to have an interest in and a desire to find out and think more about SD in their daily lives after participating in the SD-music teaching intervention. In School C, a boy told me that 'when I watch TV, I begin to watch some videos about the earth. But I didn't care about it before.' 'Oh, it made me think more about the environment and how we treat it', said a girl in School A, 'When my

brother drops litter on the floor, then I pick up, and it makes me think more about what other people are doing when they are out.' Immediately, another boy added that 'I learned a lot about sustainability. It also made me think about all of them, like how much I need to be aware and how much I need to do.' Moreover, a growing tendency of concern for the SD issues, and empathy with the problems that occurred in the current world was also demonstrated quantitatively, indicated in Figure 6.5.

Figure 6.5:

The comparison of students' different levels of concern on SD problems



Furthermore, as the majority of students' understandings of the importance of living sustainably have been strengthened, examined in the last section, they appeared to become more aware that their own choices, living styles and behaviours could affect local, national, global and even future issues. During the post-teaching interviews, a number of students could not help to reflect on how they and other people behaved which affected the world around them. The topics on '3Rs' (Reduce, Reuse, Recycle) and 'deforestation' were frequently mentioned even though they were involved in the learning activities in different music classrooms:

'What I did before was a disgrace. I didn't care about environment, pollution, didn't recycle, although there are recycle bins in school. I think it was

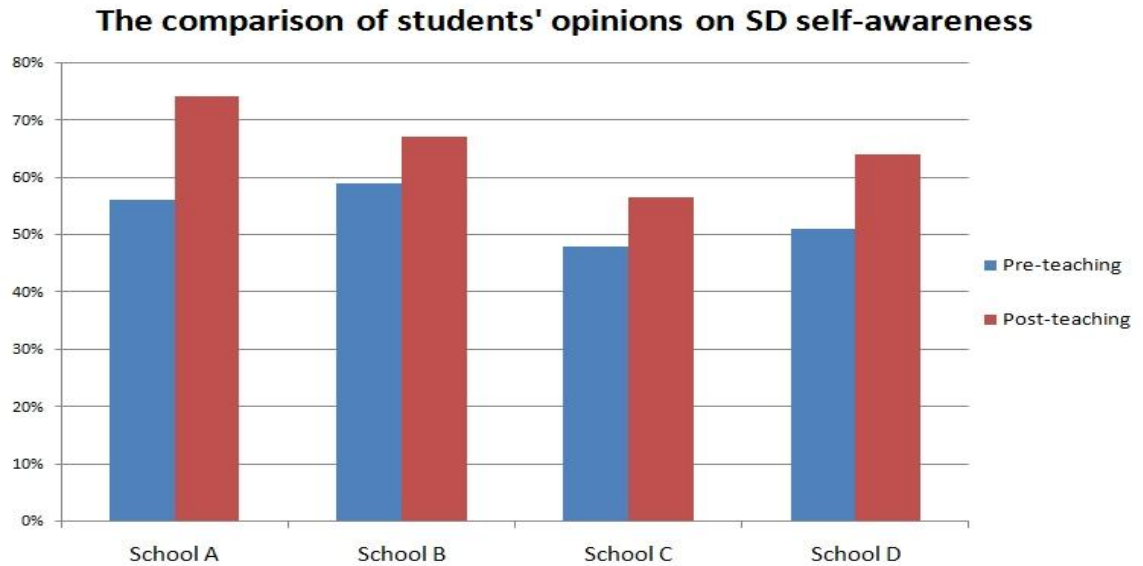
terrible.....People shouldn't destroy the environment, like cut down trees to make things for money. Humans and animals would have nowhere to live.' – One boy (School B)

'I learned what we do is good and what is bad. For example, cutting some trees is bad for the environment, and 'sustainable development' can change our earth, can change our lives, so it can make differences.' – One boy (School A)

'Everyone is wasting, not everyone, but most people don't make difference when they actually can.' – One girl (School D)

Meanwhile, compared to the pre-teaching viewpoints of some students, such as 'I never thought this is so important' (School C) and 'we are too young for this kind of thing' (School D), an increasing number of students started to be strongly conscious of the notable impact on the future world which might be made by the ways that they treat it from now on. As one girl in School B argued, 'it changes how I feel, because it taught us about what happens if you don't treat our environment correctly. So if you carry on doing what we do, everything cannot be controlled.' The need for and urgency of 'taking more care of/looking after the world', words which frequently appeared during interviews in each school, were realised by most students by the end of the project. While some students expressed eco-centric views, such as 'we do need to do more stuff to help the environment and maintain the habitats for animals' (School B), most of them expressed anthropocentric views, such as 'if we don't look after the world, we will not live on it' (School A), 'if you don't look after, it could get worse, people could not see beautiful places and wild animals' (School B) and 'recycling more would help my life' (School D). In addition to these, the data displayed in Figure 6.6 supports the above qualitative findings. It is not hard to see from this figure that whether in School A, B, C or D, after the SD learning project in music classrooms, the overall level of consciousness in the participating class is higher than before, and the students' awareness towards SD in School A appeared to be improved more than the students in other three schools.

Figure 6.6:



By the end of the research in each school, a few students expressed a strong wish for promoting the achievement of SD, which was likely to have stemmed from a sense of responsibility aroused in music-SD lessons. As Mr. Davis pointed out, 'if you tell them they should do something, if they understand why, then they are more like to do it.' According to the findings collected from questionnaires (see Figure 6.7), while a number of students often lived in some sustainable ways before the participation in this research project, such as saving water and electricity, taking good care of animals and plants, walking or cycling short distances, doing more recycling and reusing, paying more for products whose production and packaging does not damage the environment and finding out more about SD from other sources, after the teaching intervention, more students strongly believed that they would do the above listed sustainable behaviours in the future. There was an obvious change in School B's students' attitudes towards living sustainably, even though the change in these students' SD knowledge was not conspicuous compared to other three schools. In School D, in spite of the change between students' pre- and post- teaching attitudes being slight, the number of students who decided to do more recycling and reusing after the intervention was twice the number of students who often recycled and reused before, which may have been influenced by the learning content and classroom activities these students engaged in. The interesting phenomenon was also discovered in School C students' answers. Double the number of students in School C after teaching intended to save energy more often, including water,

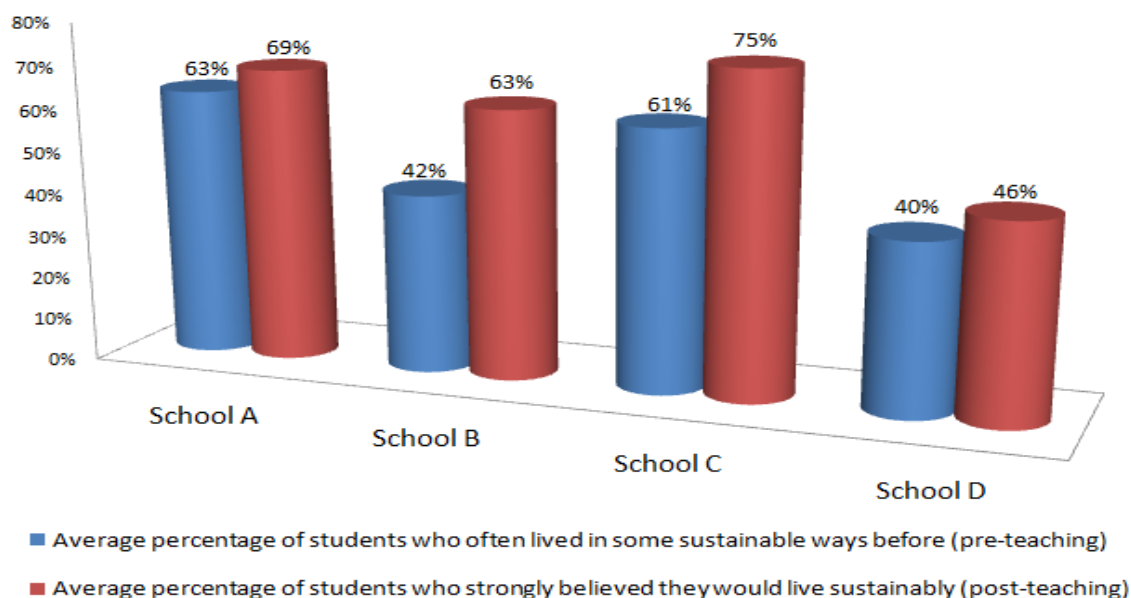
electricity and gas; topics discussed repeatedly with music teachers in their classroom. Additionally, in each school, a number of students expressed their desires to make contributions to the world during interviews. For example, the point of view from one boy in School B is that

'We are not confident in the environment for the future, so we should change us. I can and I will help the world.....Because if I do it, you do it, they might want to do it, half of the world would do it. If the people keep doing what they are doing now, it's gonna like make the environment worse. It can make difference, so the whole world has to do it.'

The great majority of students in the four schools, who showed a great eagerness to promote SD by their own future actions, planned to improve their behaviours to help the environment and do more recycling and reusing. The rest of them talked about helping children who suffer from poverty and take actions for the reduction of pollution. Moreover, it is predictable that nearly all students from School D mentioned 'recycling' throughout researcher-student conversations around this issue. 'Before, I never recycled, and you know, this just gave me like cool, like I should recycle. But now, I know more about it and I am ready to do more recycling', said one girl.

Figure 6.7:

Students' pre-teaching SD behaviours and post-teaching attitudes towards living sustainably



6.2.4 Behaviours

As discussed in the literature review, encouraging positive changes in behaviours for a more sustainable society for all is the ultimate goal of the United Nations Decade for Education for Sustainable Development (DESD) (UNESCO, 2007). As an outcome of the integration of the concepts and values of SD into the learning process, the need for the assessment of whether the changes in learners' behaviours are taking place was strongly emphasised by Michalos, Creech, McDonald and Kahlke (2009). With a large number of students' growing awareness of taking action for change rather than just knowing about the needs of the world, they had started to make an impact on their lives. A number of them kept what they learned in the lessons at the back of the mind, which prompted them to change some of the things they do in their daily lives in a positive way. For instance, a boy in School A shared his experiences that 'music is catchy. Every time I take the rubbish out, I am singing the recycle song, and it reminds me of recycling'.

According to the findings obtained from informal and formal conversations with participants, many students appeared to carry out eco-friendly activities in their own time both within and outside their school, such as reusing, recycling, looking after the environment, saving energy and encouraging collective 'family' change (see Table 6.4), which will be further explicated in the following paragraphs. It is shown in Table 6.4 that in comparison with the students in Schools B and D, which took more actions to protect the environment, including recycling after the teaching programme, School A students' altered aspects of behaviours were broader. A close relationship between students' post-teaching behaviours and what they learned in the music-SD lessons, was obviously reflected in the findings from Schools B and D: students' classroom learning with regard to the landscape pictures and Junk Music Band directly influenced their preference for future behaviours towards SD. Moreover, it should be noted that due to the limited time for group discussions around the topics concerning SD behaviours in School C, the data collected from the students in the school is only used as evidence here, rather than used for comparison.

Table 6.4: The summary of which aspects of behaviours that the students in each school made positive changes in

	School A	School B	School C	School D
Recycling	★	★	★	★★★
Reusing	★			★
Protecting environment	★	★★		
Saving energy	★	★	★	
Encouraging 'family' change	★			★

Note: The more number of '★' the school has, the more students had made positive changes in behaviours.

'Recycling' was one of the most frequent issues that appeared in students' group discussions, no matter what the topic of discussion was. In terms of students' behaviours, 'recycling' was the only one that the students from all sample schools took more action on, especially in School D. In School D, after recycling, reusing of reclaimed materials and transforming them as art materials in the lessons, almost all students seemed to make positive changes in their attitudes and behaviours towards recycling. For example, a girl illustrated that 'I know that polluting our world is bad, so now I recycle, and that's better for our city and our area we live.....before I put all in the bin, but now I recycle them, I put like paper in the recycling bag'. Their music teacher offered more evidence for this: 'Some of them started recycling, so that's the change already', he said, 'They told me that they recycle at home because of these lessons.' Probably due to the impressionable song – 'Reduce, Reuse, Recycle' and the rap they created regarding recycling, around one third of the students in School A was influenced to start recycling. One boy in the school described his personal experience of recycling:

'I didn't throw the bottles in a recycling bin, and my mom said it a lot. Now I learned a lot about sustainability and the world, so I actually throw them in recycling boxes. So like sort them by quality, quantity and size, and put them in different bins, like juice and drink, just keep them in a same bag.'

Along with their attempts at recycling, some Schools A and D students started to reuse waste materials at the same time, for instance, repeatedly reusing plastic carrier bags and bottles, which they never did before.

Apart from recycling and reusing, some students also made a conscious effort to protect the environment and energy by stopping littering, picking up rubbish, keeping off the grass, and saving water and electricity at home. 'It changes my behaviour and my classmates' behaviour.', said one student in School B, 'Sometimes, I found a tissue litter on the floor, I didn't pick up, I thought somebody would pick up. But now, when I see people littering, I pick the litter into the nearby bins.' 'We do, because we know it is bad for the environment.' the student who sat opposite added immediately. In School B, around half of students appeared to contribute more towards eco-friendly behaviours. A student in a different group provided one other example that 'it changes my feelings and behaviours, like I don't like run across the grass now, just run around that'. In terms of saving energy, some students from Schools A, B and C illustrated what they did more than before for saving water and electricity, such as turning off the tap when brushing their teeth, turning off unnecessary lights, television and computers, and taking a shorter shower instead of a bath.

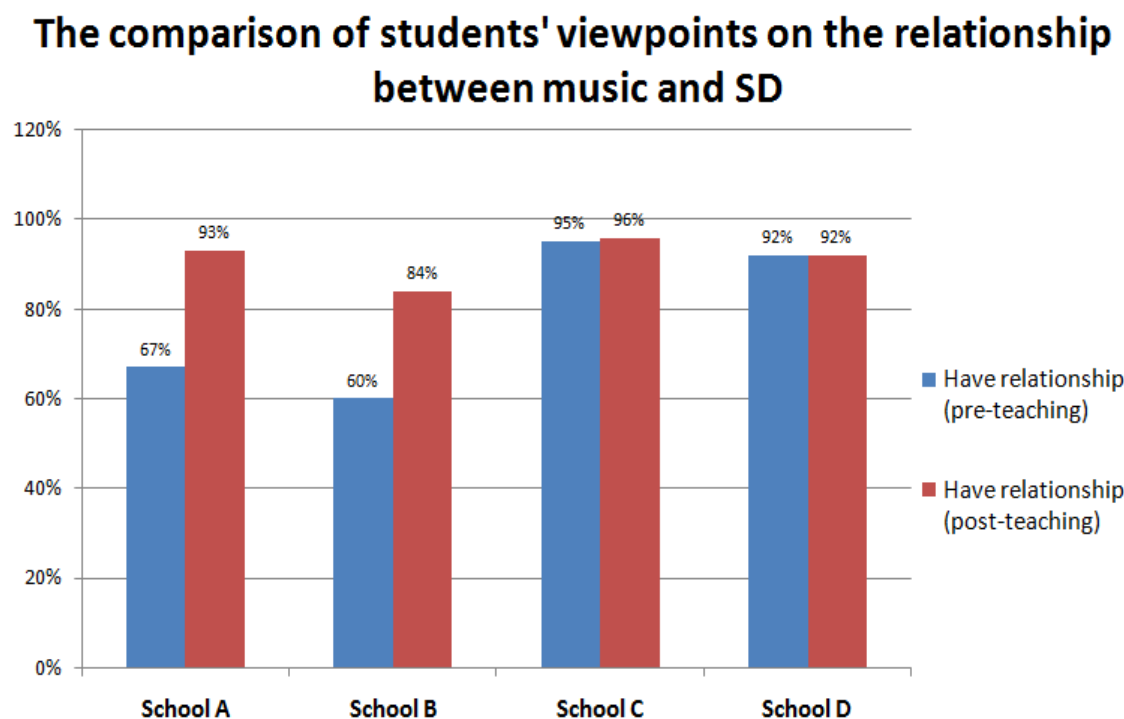
A few students attempted to take the lead in living a more sustainable lifestyle at home. It is manifestly displayed in Table 6.4 that the type of behaviours the great majority of students had improved was in the 'private sphere' (Stern, 2000), which is a major area of emphasis in many UK schools (Gayford, 2009). However, there are limited effects that 'private sphere' actions can produce to solve environmental problems, unless the 'private' is combined with organising 'public sphere' actions (Gayford, 2009). As Mr. Campbell pointed out, how students behave mostly depends on their age and the opportunities available. That was probably one of the main reasons for the smaller number of students who made contributions to promote collective 'family' instead of 'public' changes. 'I prompt my family more in recycling. We used to recycle, but now have all different containers and we care more about environment', said a girl in School A. Additionally, a boy in School D told his classmates with a tone of pride and satisfaction that 'My mum told me to recycle, but now I told her to recycle.'

6.3 Participants' perspectives on the connection of music learning and SD leaning

Throughout the project, all participants were empowered and encouraged to express their own feelings and points of views on the relationship between music and issues of SD, as well as the effects that music classroom activities had on their SD learning. From Figure 6.8, it can be found that after the teaching intervention, more than 80 percent of students in each school considered that music and SD were related, with an obvious increase in the number of students who discovered the relationship between them in Schools A and B. A School C student felt that 'we learn from science, and then we do it by music', and this is the view a student in School B held:

'I think the connection is that you can use the music to go with the SD and describe it. When you do the music, you can do it for the good settings, like lots of trees and wild life, and you also can do bad one, like, (he started to croon a slow, deep and heavy rhythm and tune).'

Figure 6.8:

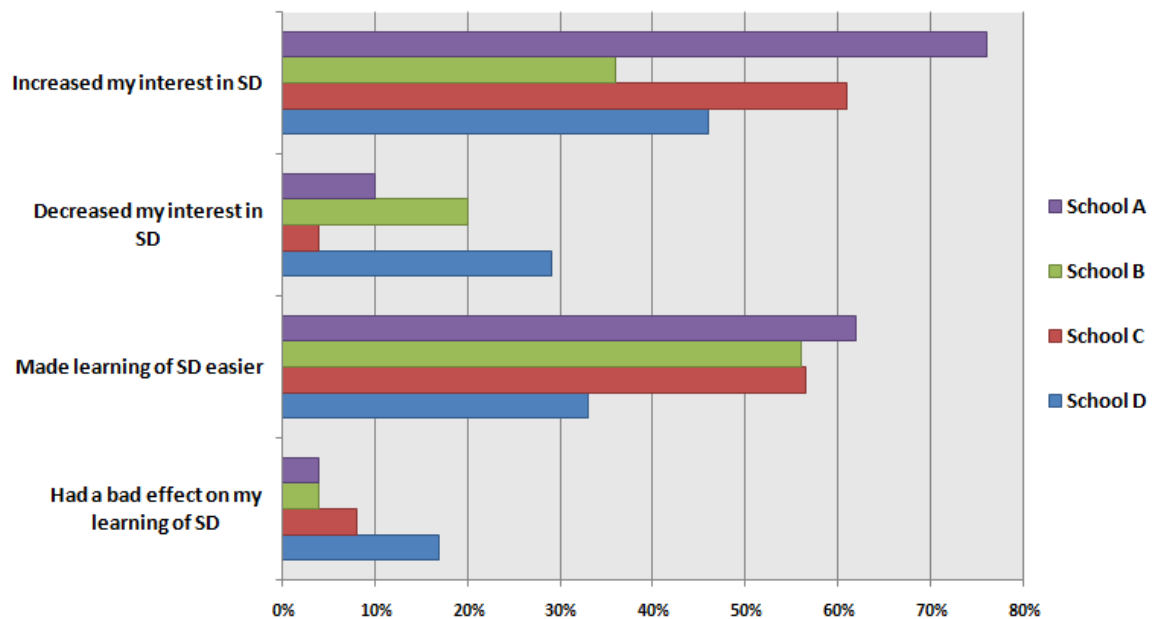


The four music teachers were increasingly aware of the links between music and SD as well. For example, Mr. Campbell from School A described music as 'means', 'medium'

and 'vehicle' for promoting SD learning even the achievement of sustainability, and believed that 'music is probably one of the best subjects which is related to the sustainable development curriculum subjects'. Mr. Morsi in School D articulated his viewpoints that 'being a musician, I think the music can do anything for SD. So I think if the right people sing the right song, they can make a huge impact.' Moreover, comments from participating students reflect a strong basis that music offered for exploring issues of SD. For some of them, the positive influence was combined with awareness that music activities supported some aspects of SD learning, and sometimes even worked better than other subjects, including science and geography, which commonly cover more learning content regarding SD in schools. A number of students in each school expressed their positive feelings about the impact of learning music and the success of integrating this with SD. For example, a girl in School A said, 'it's good to connect the two subjects together. It helps us learn more things about sustainable development'. And another student in School C argued that 'it helps us learn sustainable development, as well as learn music, because of the activities. We do that in music, er, helps much better than in science'. Additionally, the quantitative data suggests that a lot of students' interests in SD were aroused throughout their participation in a variety of classroom activities in the music lessons, and the special learning experiences seemingly provided them with an easier way for SD learning (see Figure 6.9). According to Figure 6.9, in comparison with the other three sample schools, the students in School A appeared to benefit most in the two aspects of SD learning from the music-SD lessons. To further examine the unique role that music education could play in the improvement of students' SD learning, the participants' viewpoints are summarised into four themes, which will be discussed separately below.

Figure 6.9:

Students' post-teaching viewpoints on the changes in their SD learning



6.3.1 Constructionism and symbolic interactionism → knowledge and understanding of SD

In the context of sustainability, there are two models of education with contrasting theoretical traditions, which were summarised by Sterling (2001) and Biggs (1996). The first one is 'transmission' which uses the objectivist approach to teach and transmit knowledge (Sterling, 2001 p.38). It keeps control at the centre and requires learners to learn and receive knowledge accurately, and then store it and use it appropriately. By contrast, the 'transformative' one, which is based on the constructionist paradigm, encourages learners to be central in the creation of meaning and acquisition of knowledge (Biggs, 1996 p.348; Sterling, 2001 p.38). Between the two modes, the importance of transformative qualities to improve the effectiveness of teaching and learning strategies in ESD was emphasised by Sterling (2001), meanwhile, to empower learners for social change, he suggested a constructionist approach. The link between constructionist theory and pedagogy and its positive influence on the final realisation of knowledge in classrooms have been identified by some researchers in the field of environmental education or ESD (e.g. Loughland, 2006; Law, 2003; McNaughton, 2008;

Zhai, 2012). As Barnes (1992) pointed out, 'each of us can only learn by making sense of what happens to us through actively constructing a world for ourselves' (p.1 23).

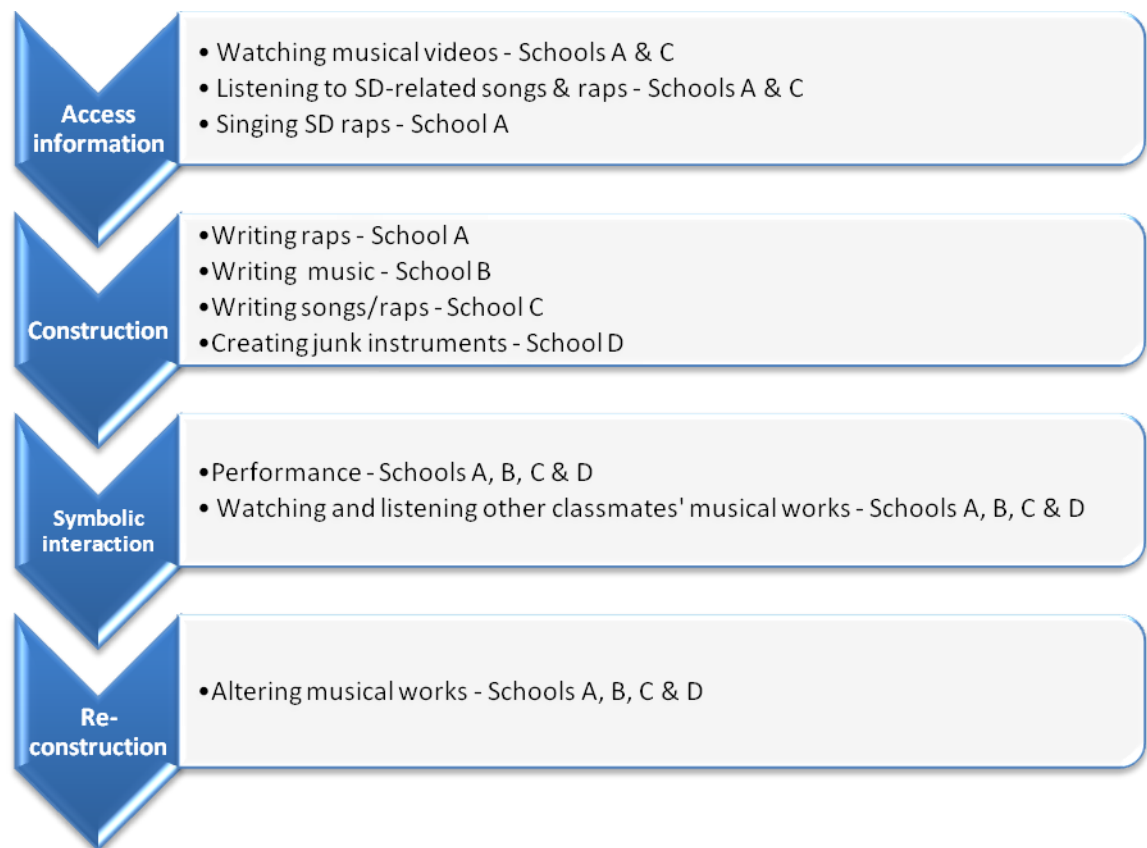
The classroom activities for music learning in this study emerged from a social constructionist epistemology, which sees knowledge as socially constructed, facilitates transformative education and encourages ownership of the knowledge, as discussed in the preceding paragraph and Section 3.2. Classrooms can be considered as social places (Johnson & Johnson, 1996 cited in MacKinnon, 2005). It seems that most students' musical learning experiences in this kind of social place, including listening, creating and performing, contributed to the development and self-construction of their understanding of matters relevant to sustainable development by leading them to respond a basic question: what meaning does this (e.g. SD concept, issue, idea and fact) have for me?. 'I think through the course of the lessons, the kids were introduced to a lot of concepts regarding sustainable development and obviously reinforced those through the musical component of the rap and performance and what else as well', said Mr. Campbell. A girl in School C argued that 'science is everyone's world, but the song or rap you write is your own world. In music, you were telling everyone what is in your world, but that's hard in science.' By synthesizing various opinions from participants, how different musical classroom activities link with the constructionist paradigm of students' SD learning, which embraces the process of symbolic interactionism, is displayed in Figure 6.10 and will be explained in the next paragraphs.

In comparison with the learning style of traditional subjects for imparting SD-related knowledge, the emphasis in the music-SD lessons fell upon construction and sharing, rather than mere learning and absorption. As Mr. Davis stated, 'in the music, students' were allowed to actively develop their own knowledge, understanding and opinions when they created some sort of musical pieces, rather than only being recipients of knowledge or ideas imposed by the teacher.' According to students' descriptions from different schools, they were not only encouraged to seek and receive messages from musical videos, songs and raps (Schools A and C), which 'have detailed information about sustainable development' (a boy in School A) and gave them 'more ideas, like what can

be put in a song and how to convince people to reduce, reuse' (a boy in School C), but also offered a great deal of time to think and make their own meanings of SD through compositions (Schools A, B and C) and creating junk instruments (School D) (see Figure 6.10). Mr. Morsi from School D elaborated his students' learning experiences in terms of the process of constructing meanings as follows:

'They (students) integrated the concept of sustainable development, sorted out and developed their own ideas, reflected on what 'recycling' and 'reusing' might have meant to them, and then translated their ideas into actions (recycling and reusing recycled materials to make instruments).'

Figure 6.10: The process of students' constructionist mode of SD learning which aligns with the musical activities they engaged in



Compared to School D's students, the students in the other three schools were seemingly provided with more freedom of construction of meanings in a musical way, especially in Schools A and C, in which students could use both lyrics and melody or rhythmic patterns to construct their own understandings and viewpoints. A student in School C explained that 'in Music, like you make your own stuff.....we were literally and musically writing about ourselves, all that happened to us in the past, and what we think,

like how to take care of the environment.’ ‘In music, we get to produce by ourselves, like, how we feel in everything about sustainable development. But in science, we get to like only look at things’, one other student from the same interview group added.

In each school, symbolic interaction, as one part of meaning-making in a social context (Taylor, Gilmer & Tobin, 2002 cited in MacKinnon, 2005), appeared throughout the process of students’ construction of knowledge and meaning in their music classrooms. As Leeds-Hurwitz (2012) made clear, it pays particular attention to the actual use of ‘symbols’ in communication between human beings. Communication, which was defined as ‘the act or process of transmission’ (Berelson & Steiner, 1964 p.527), is also stressed by some constructionists. For example, the viewpoint of Chin (2007 p.837) is that the world and everything in the world, including knowledge, are ‘socially co-constructed as new ideas emerge from the blending of voices and gradually meshed to produce a dialogic outcome’. In this study, while the music-SD lessons empowered students to communicate using different ‘symbols’, for instance, language, words, pictures and music, a lot of participants started to be concerned about the relevant effects that music caused, and a number of them, who were mainly from Schools A and C, described music as an effective vehicle of ‘sending and sharing information’ during post-teaching interviews. A student from School A stated that ‘rap provides a powerful platform for delivering messages and for receiving them. It is an ideal tool in the ESD programme’.

Music, as an art form, is regarded as a ‘fundamental aspect’ of both ‘human communication and expression’ (Duke, 2000 p.24). In this study, students in each school were encouraged to engage with music as a vehicle of self-expression and with performance activity as a way of conveying individual or group voices (see Figure 6.10). This appears to be distinctive in comparison with the other SD-related lessons. ‘(It is) a really fun way to express sustainability’, said a student in School C, ‘In music, we expressed and shared ideas by writing a song about it. In Humanities and the other subjects, we didn’t say our own opinion’. According to the responses from Schools A, C and D, students were allowed to ‘express what sustainable development is and what

people need to do to help the world within the music', as one student in School A said.

Another boy in School A described his learning experience as follows:

'We put things about pollution into a rap, because when somebody is asked to reduce the use of car, they don't understand it. When you spread message and tell them the reason, they maybe will get the message and stop (pollution) with this.'

In School D, without lots of composition works, 'what we performed and our instruments send messages to make everyone to think recycling', as a student explained. Moreover, many students 'made music pieces to express their feelings on what they think about sustainable development' (a student in School A) as well. 'Because we have learned lots of things (about SD), it allowed us to feel free to express our own things in music, like show your feelings, like how you thought', said a student in School B.

Participants' comments suggest that social interaction through music, which mainly took place in performance, facilitated students' effective acceptance of information from different people, better understanding of SD issues and further construction of knowledge and ideas. Performance can be viewed as a way of passing information from a giver to a receiver in the present project. While different groups or pairs of students sent messages through lyrics, melody, rhythm and body language in turn, other students received that and thought with a real possibility of responding and reconstructing their own meanings. As students from different schools explicated, 'when you hear the melody, music can show you what kind of sustainable world' (School B) and 'gave (them) ideas about what to do – take care the world' (School A). 'Songs or raps, these things, (students) get the message better' (School C), as 'if you sing about it, people will not think it is so boring' (School A). Moreover, the students in Schools A and C expressed their feelings that SD was 'easy to be understood' and could be 'understood better' through music, in two School C students' words. 'In geography, we don't really understand,' said a student in School A, 'In music, I understand the lyrics, I understand what he try to say to us'. One other student added that 'they (SD and music) are combined together. (It) makes us happy and makes us understand more, like what we have to do'. Mr. Campbell

expressed his points of view based on what he discovered from the classroom observations:

'I think music is an important language and might affect the world, and you can actually use the platform to develop students' understanding of this (SD).....With creative aspect of that, it can be shaped to address students' misunderstanding of, lack of understanding of this topic (SD). In such way, other students can access information and therefore shape in their own way, and actually develop their understanding of sustainable development and everything related to it.....It probably got their potential to increase the message a lot more than other subjects.'

After the teaching intervention, the ability of music to promote effective communication was recognised by a number of participants. Both Mr. Campbell and Mr. Davis held the opinion that students should deliver the messages in such a musical way to more children and even leaders in the future, and therefore could make a much bigger impact on the world. At the same time, some students strongly recommended to mix SD with pop music. A transcript of a student group conversation in School A is showed in Box 6.1 as an example here.

Box 6.1: A transcript of a student group conversation in School A

A boy: 'If you get like a pop star to sing some songs you made about sustainability and environment, then people all around the world is gonna be more happy to help the environment.'

Other students: 'Yeah, definitely.'

A girl: 'If it's the famous pop star, then many people like to listen to. It becomes the good thing.'

6.3.2 Affectivity → Awareness, attitudes and potential behaviours towards SD

From the statements that participants in Schools A, B and C made in post-teaching interviews, the power of music helps students to engage with issues of SD not only on a cognitive level, but also on an affective level. 'Learning affectively by engaging individuals' emotions is a powerful strategy' (Law, 2003 p.246), and music has the capacity to elicit a range of emotions to promote listeners' affective development

(Vasileiou, 2002) and emotional thinking (Vygostsky, 1971), and raise their emotional awareness (Ferraz, 2011).

A number of students perceived the engagement of musical activities to be an experience in the communication of emotion. As mentioned in the last section, the opportunities for ‘show(ing) attitudes’ (a student in School A) and ‘express(ing) their own feelings’ (a student in School B) about SD issues through their music works were provided in the music-SD lessons. These were seldom encouraged in the other subjects. In School B, since it seemed to be hard for students to send messages relating to the knowledge of SD without lyrics, the expression of feelings for the two sets of pictures that Mr. Wilson offered automatically became the centre of their composition work. A student referred to his experiences of composition:

‘We got two pictures. When the nature is good, we used a little bit fast, jumpy and loud rhythm to make the music sound happy. And when the environment is bad, like all of the trees are chopped down, we used the slow and quiet rhythm to make the melody sounds gloomy.’

Moreover, the students from three schools indicated that no matter which types of musical activities they were involved in – composing, listening or performing, the emotions, such as a sense of good and bad and a feeling of love, admiration, pity, sympathy or depression, were aroused and lasted in the ‘heart’ and ‘mind’. The interpretation of a student from School C can be seen as an example here:

‘We were singing a song about the environment, about the whole world, and like people in different countries were suffering by some social or environmental problems.....To be honest, the tunes, the music still get in my head, and it quite makes me feel sad about the world and these people when I think, like some trees are fallen, and (there was) the fire of war in some countries.’

According to Senge et al.’s (2005) viewpoint, the transformation of the human being’s heart is the only change which could make a difference in society.

With the development of students’ affectivity, the emotionally engaged learning also made an impact on their attitudes and values with regard to SD issues, since it

encouraged students' 'commitment to compassion and justice' (Mr. Wilson), which is considered to be necessary to achieve SD (Dobson, 2003). It also developed empathy, which could lead learners to change in a positive way for sustainability (Law, 2003). During conversations between the researcher and students in different schools, a number of students expressed worry about the environment and the future world after their participation in a range of musical classroom activities. In the meantime, some of the other students thought 'music is more persuasive' than the other subjects, especially the songs and raps, which contain 'persuasive language', for instance, 'ok, I will do that' and 'oh yeah, oh yeah, let's save the world', in their words. A student in School A held views that

'Singing rap is like sending a message. When they (people) sing or listen to the raps or songs about it (SD), they maybe do the good things more in the future, and the songs could push on it. Geography is like writing, not persuading.'

'Yeah, like, I'm not sure we can really stop it (pollution), but we will reduce the numbers of pollution', one other student added immediately. In contrast with the music-SD lessons in the project, the traditional science or geography lessons apparently cannot activate and reinforce students' attitudes towards SD. As a boy in School C pointed out, 'in science, sustainable development, it's a great idea in concept. But if you want us to apply to the world, it doesn't really work'.

6.3.3 Interest and enthusiasm → Attitudes towards SD learning

There is a strong relationship between students' attitudes towards the learning involved in the subjects and their cognitive and academic achievement (Papanastasiou & Zembylas, 2002). Moreover, the interest and enthusiasm for the subjects determines the level of effort the students put in, as well as influences their attitudes and attainment (Vasileiou, 2002). During post-teaching interviews in each school, the majority of students expressed their interest and willingness to learn SD through music. For example, a boy in School C said, 'what I kind used to do is talking with other person necessarily, but now I get interested in the lesson and become enthusiastic about learning about sustainability and music.' Simultaneously, the value of the music education to the positive

learning environment, which environment may generate interest and enthusiasm for the subject being taught (McNaughton, 2008), was recognised by them as well: 'It helps us find out about the environment in a fun way' (one student in School C); 'I get happy with learning, and I think it's fun and creates a relaxed atmosphere' (one student in School D). While the students in each school frequently used the word – 'boring' to depict the experiences of learning SD in science and geography, a large number of students described their learning experiences in Music as 'fun', 'interesting', 'exciting', 'enjoyable' and 'cool' and showed more affection for the music-SD lessons.

'Music made learning sustainable development more interesting, because people would find new and different ways to learn' (a boy in School B). As a student in School C perceived, 'it (SD) is combined with music, and we actually enjoyed the way we learned and received it (SD), what makes it (SD) fun'. According to students' explanations, a holistic learning process for SD learning that they were involved in throughout the teaching intervention was one of the main reasons for their preference in learning SD in music. While the traditional learning style for SD education – 'sitting down and listening', 'writing', 'reading', 'discussing', and occasionally looking at 'photos' or 'maps', 'investigating' and doing 'experiments', was employed in science and geography, a range of different modes of learning in cognitive, affective and kinesthetic aspects were experienced by students. These included 'listening' to music, 'making instruments' to 'make different sounds', 'singing', 'playing instruments', 'performing', watching 'eye-catching' 'videos' and 'pictures', 'moving body', 'discussing', and occasionally 'reading' and 'writing', as perceived and described by a lot of students in each school. A heated discussion around the topic took place in the students' group interviews in each school:

'We just do the same thing in geography.....it only can use lots of writing and reading to make sure students (learn) for sustainable development' – A boy in School A

'I think in music, we had interesting pictures and music to describe sustainable development, whereas in geography, we just had like words, no pictures and music. It's very boring. I fall asleep sometimes.' – A boy in School B

'I think the music (lesson) is better, because we get to do activities on the environment and music. We not only learn, but play. We get entertainment.' – A girl in School C

Moreover, a pedagogy of empowerment, which is essential in a transformative process for learning (Law, 2003), stimulated students' interest in their SD learning. 'In music, you can write and sing your own songs, you can make your tunes to express your feelings, high or low, soft or hard, or fast or slow. Writing and performing your own music would be a bit fun and fantastic', as a student in School C elaborated, whereas one School B student argued that 'in geography, just copy and write, and you can't make some stuff on your own'. Furthermore, the students' excitement was also created by 'making something new' and 'being practical', in students' words. The viewpoints from two students are selected here as examples for explicating and supporting the argument:

'It was interesting that we actually did something I didn't do (before), which is really fun.....Like we recycled stuff, and then brought it to the class to make instruments and make music, which is cool. We don't do that in geography, and we also never get to do that in Music. It was different from the normal.' – A girl in School D

'I prefer music, because science is like so much writing and a little bit investigations, and practical is short, not very long. But in music, we learned more different stuff, and music is more practical than writing. It is like just go and do the practical straight away, just like, the teacher tells you, and then you do it by yourself.' – A boy in School C

The musical activities within the music-SD lessons that provided students with enjoyment and interest, increased their motivation and helped the children to maintain involvement in their learning, and thus promote their participative and active learning. It is the viewpoint of some researchers that students' full engagement in the learning process, as one of the features of deep learning (McNaughton, 2008), are particularly effective for obtaining valuable educational outcomes (Gayford, 2009). A number of students in each school expressed their feelings that in contrast with science or geography, they 'got more involved' in the process of SD learning in music, and 'learned more' as what they did in music 'is more than training and drilling'. 'With my science classes, it teaches the similar

thing. I don't really take part in, like not listen. That's why I found this (music) is a lot more educational than science', said a student in School C, 'Because we actually learn something about sustainability, and we actually enjoy learning about this.' In addition to this, active learning, which not only relates to the learner's attitude but relates to the way that the learning task is completed – learning by doing, rather than being told, is widely encouraged by educators (Lowe, 2013). In the study, a range of musical activities and teaching strategies in each school's music classroom offered opportunities for students to be actively involved in the process of SD-related learning. Some of them were motivated pragmatically and seek to meet the demands of the task with the best outcomes. A student in School A felt that 'in music, we can get more active, because we have to research and try things out to make our own song. If it is science, we used to sit down and listen to the teacher, it's more passive'. Meanwhile, a School D student's experience with regard to active participation can be viewed as another example:

'When Mr. Morsi told us we can make our instruments by used things, many children just made very boring instruments, like rice in the bottle. So I went back home, and I tried to go to the internet and research. I tried to reuse different things and put them together. So the instrument I made is completely different from others.'

6.3.4 Memory → Personal learning outcomes

Traditional learning activities related to learning for sustainability are used by teachers as a platform in and out of the classroom to instill the ideas of SD into students, especially in secondary schools, and is considered counterproductive by some people (e.g. Gayford, 2009). By contrast, innovative approaches for SD learning with students' strong involvement appear to be more effective for their achievement (Gayford, 2009). More than half the students in the present project held the opinion that music 'helps us learn more' and 'remember things about sustainable development better' than the other subjects, since 'when we were taught, we enjoyed the different way' of teaching and the combination of a series of learning activities, which 'made it (SD) easier for us to remember', as perceived by a girl in School C. The other students in other schools added comments that 'in science, you should remember a lot of facts, but sometimes it could

just turn off your mind, because you always get a bit bored. But in music, mostly is fun' (School C). 'We do different things' (School B), and 'it gives stuff to help us remember, like rhymes, it's easy to remember' (School C). So 'we are more engaged in the interesting lesson' (School D) and then 'get it (SD) in our head more' (Schools A & C). Mr. Campbell also discovered the power of integrating the learning of music and SD to acquire and retain knowledge regarding SD. He felt that

'Most subjects may deliver through the formal text, reading materials and so on. Whereas when they were rapping about environment and composing music in relation to endangered species, mostly, the kids were more interested in and more than touched by it, probably, got retention of memory for the longer term than just reading more information on the page.'

The innovative nature of students' learning experiences with regard to SD in the music-SD lessons is partly shown by their SD learning with autonomy, practicality and creativity, which was regarded by a large number of participating students as a powerful impetus to keeping their knowledge of SD in mind. It was concluded by a student in School C that the other subjects 'stay on your knowledge side', 'whereas SD learning in music is based on your creative side.' The comments from students in each school suggested that the process of self-construction and communication 'stimulated (their) brains' (School C) to 'think of things' (Schools A & C) related to SD as well as to 'stick ideas in the mind' (School A). For example, a girl in School B talked about her feeling as follows:

'In geography, I think you easily forget some stuff, but in music, you created and played your own music about it (SD) with stays in your head. Each song you made reminds you stuff, like some bad and some good things. It reminds me things about sustainable development more, and I still remember how about sustainability.'

A lot of students in School C held and expressed similar opinions at the end of the project, for instance, one of them explicated that 'it's easy to remember in music. Because if you create a rap, practise it continuously and tell others which is good (for SD), and then you also can remember it'. Moreover, in terms of recycling, the way School D's students were doing it in their music-SD lessons appeared to be more 'practical' than in science or

geography, and they thought they got better understanding of the '3Rs' (Reduce, Reuse and Recycle) and remembered more in music. It is the view of Aristotle that 'for the things we have to learn before we can do them, we learn by doing them' (Wang, 2008 p.20). According to the viewpoints of students in School D, in geography, they just 'watch videos', 'talk', 'read' and 'write down' to 'learn how to save the earth', but 'don't really do any actions to save the earth', hence, they 'don't actually remember a lot'. 'It's hard to learn about things be talked about in geography', said a boy. By contrast, students 'learned it ('3Rs') physically' by connecting taking actions and instruments making in music. This approach was viewed by many students as a driving force for a better understanding and remembrance of '3Rs', particularly 'how to do it'.

Music with the charm of its own, which arouses students' enthusiasm and brings about positive affectivity to them, seemingly helped students develop a strong memory for SD-related knowledge. Emotions play a vital role in guiding their attention and in improving memory (Vasileiou, 2002). As a student in School A made clear, 'people love music, so they will listen'. In the study, music was described as 'catchy' by a number of students in Schools A and C. The points of view of two students in both schools can be seen as examples here:

'I like music, so when I listen to the music about sustainability, sing the songs and keep playing the songs about that, I will remember that.' – School C
'It's very very catchy, and can't get out of your head. The tunes and the lyrics just stay in my head and don't go away.....We still remember about sustainability.'
 – School A

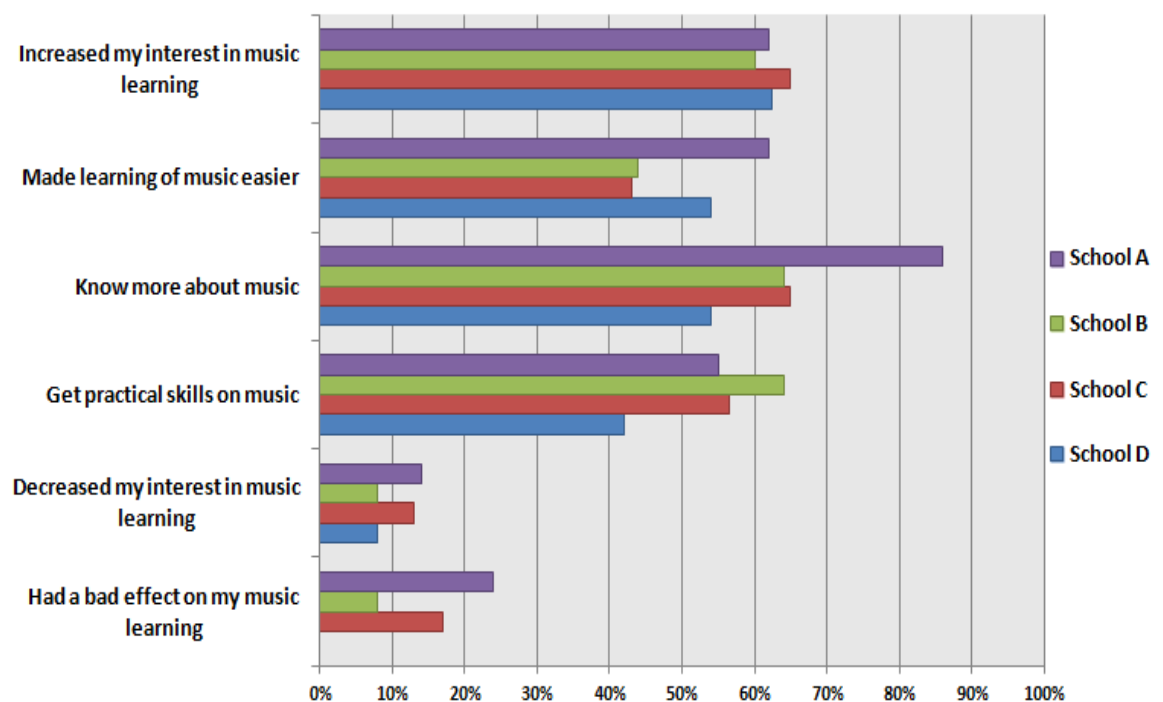
In the post-teaching interviews with students in School A, several students sang the impressive part of the raps and the song named '3Rs' on an irresistible impulse along with telling me about their feelings, for instance: 'my classmates can sing the song 'Reduce, Reuse, Recycle', and many of them sing it. I stock it in my head and think it'; 'I didn't think where the issue comes from. After music, when I always hear and sing 'litter, litter, litter', I will think about the song, and 'litter' will be in my head'. In addition to this, some students pointed out that 'the music is more effective' and is easily got 'into the mindset' (a student in School A). 'Like when you listen to or sing that, you feel music in

your mind’, said a student in School C, ‘and when you listen to it again, it will remind you of something, like what happens in the lessons and what the song talks about. So you can remember easily.’ The elaboration of a girl in School A is that ‘it’s a really affective thing. You become very aware, like we can’t run out of the electricity. So if you listen to music over and over, again and again, then you can remember all of them in every day’.

Students’ learning of SD and their music learning interacted upon each other. The findings obtained through questionnaires (see Figure 6.11) and interviews suggest that SD also has the potential to support and enhance students’ music classroom learning. Although a small number of participants thought that the music-SD lessons didn’t ‘cover as much of the music stuff as before’ (Mr. Davis) because of the lessened time for learning about music, more of them felt the positive changes that the innovative teaching approach caused in students’ learning outcomes, particularly with regard to the development of musical understanding and practical musical skills.

Figure 6.11:

Students' post-teaching viewpoints on the changes in their musical learning



Firstly, the integration of SD with music learning afforded opportunities for students to get to know more about music and to find out ‘the social and expressive meaning’ that music acquired ‘beyond its more abstract qualities as sound’ (Garnett & Allum, 2011 p.5). As a student in School C stated, ‘I learn more about how people use music for different things’. SD in each school encouraged students to engage with music as a means of self-expression. ‘I didn’t think much about music, but now it makes me think’, said a boy in School A, ‘music is special to express your own things, like show your feelings, like how you thought. It is related to any topic what you want to express’. Throughout the process of learning for expression, a new understanding of music was formed at the same time. For instance, another boy in School A made a comment that ‘we usually think using the raps is like a bad thing, but now I really realize that raps can be about anything and it could be about a good thing’.

According to the viewpoints of some participants, who perceived students’ music learning can be improved by the incorporation of SD, the new ways of learning, which they considered to be fun, made them concentrate more on the learning of music, developed their practical skills of music and stimulated the production of their musical outcomes and musical product. First of all, it was exciting for a number of students in this study that they ‘got to learn something new in music’ (a student in School B). It is particularly visible in School D, since they learn instruments but don’t make things’ in the normal music lessons. ‘It’s something different. This time we know how to make musical stuff out of recycled things, and we can get a better understanding of how much effort and what materials go to best for making music instrument’, said a boy. In the second place, learning SD in music lessons ‘help students (us) compose different types of music’ (a student in School B) with the provision of ideas. ‘With the picture, it was easier to make the music.’, as a girl from School B explained, ‘before’ it was nice and calm, and like you can make nice and calm music, and then ‘after’, it was like rocky and horrible, so you can make it like more nasty’. One other student added that ‘the picture is better, because we had no idea on what to make, and it shows you more. Then, we learn how to compose our music, song, the types of things, and we can do that further in the future’. The point of view that a student in School C held can be seen as another example here:

'In the six lessons, we get how to write raps about sustainability. It was very fun to think of a subject and write down lyrics, and by the time we were done with the rap, the music came easily.....It gives me a more positive approach to music, and there is a lot of different things to learn.'

In the meantime, students' knowledge of music relating to song writing was also advanced. It was made clear by Mr. Campbell that

'They did research and background work to develop their understanding to impact on the musical products. So they understand and know about the different musical characteristics who played that before, what the content should sound like and what they need to do to make the sound convincing.'

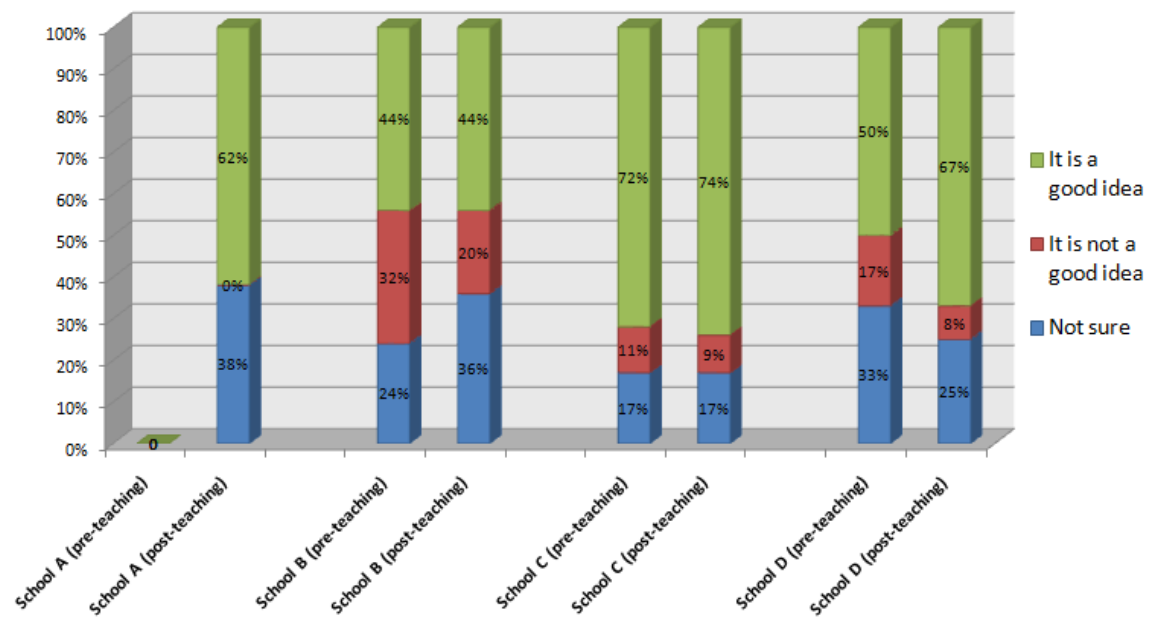
As discussed above, the great majority of participating students in the four schools realised the relationship between SD learning and music learning by the end of the project, whereas a small number of students viewed SD as an 'add on' to their musical learning. A student in School B expressed his feeling that

'I think it has nothing to do with music. Because music is about instruments, like playing a piece of music (with) the keyboards and guitar, and geography is about environment and the countries around you. I don't understand why we did that in music, learn songs about geography'.

'I don't think it should be learned in music. It can be learned in music about the world, but mainly should be learned in geography', said a girl in School A. Moreover, while more than half of students in Schools A, C and D showed positive attitudes towards the integration of SD and music learning (see Figure 6.12), there was a dispute among students who took different views in School B. The students who made negative comments preferred to 'learn more facts' and 'do experiments' in geography or science for creating a better understanding of SD. As a student in School B argued, 'music is fun, sometimes we have that in music is good. It can help, but not as much as in geography. Geography suits more than music'.

Figure 6.12:

The comparison of students' attitudes towards the connection of SD learning and music classroom learning



6.4 Summary

According to what has been discussed above, music, not only as an art form but also as a learning medium, has the great possibility of contributing to students' learning about SD. The data amassed during this research indicates that the learning activities and teaching strategies used within the music lessons empowered students to understand more about the concept of SD as well as a number of other relevant issues. It also enabled students to develop some skills necessary for undertaking activities of SD, to sharpen their awareness and adopt an attitude relating to SD concerns, and to take a range of positive actions in their daily lives for the realisation of sustainability. Due to a number of differences, such as in pedagogy, students' learning abilities and the personality of each student and music teacher, among the four schools, the effectiveness of the music-SD lessons in each school, in terms of SD learning, was different. Students' overall degree of achievement in each school, which is evaluated by the synthesis of quantitative and qualitative data, is displayed in Table 6.5, and it is obviously indicated that the students in School A seemingly obtained the best learning outcomes in comparison with the other three schools. Moreover, the feelings and perspectives of all participants on the relationships between music and SD as well as between the learning of music and SD

are explored. The findings suggest that the musical learning activities, organised by the adoption of a comprehensive approach during the music-SD lessons in each school, covered students' emotional, intellectual and social aspects of learning and had the promotional and transformative characteristics for ESD.

Table 6.5: Summary of students' SD learning outcomes in each school

	School A	School B	School C	School D
Knowledge & Understanding	★★	★	★★	★
Skills	★★	★	★	★
Awareness & Attitudes	★★	★★	★★	★★
Behaviours	★★	★	★	★★

Note: The number of '★' = the degree of achievement

The more number of '★' the school has, the higher degree of achievement the students reached.

Chapter 7 Conclusion and Discussion

7.1 Summary of the study

Sustainable development is increasingly regarded as an urgent global necessity by governments, non-governmental organizations and experts. In parallel, UNESCO (2012a) has called for more research to establish the link between SD and quality education, in order to provide evidence that ESD ‘works’ for changing people’s behaviours and lifestyles and thus to promote ESD being mainstreamed. Moreover, in spite of an appearance of discussions on the relationship between music and nature, environment, society or sustainable development, there is still not any empirical research which explores how this may effectively be achieved within the combined fields of music and SD. In this study, an attempt has been made to tackle unsustainability, with a particular emphasis on how both ESD and music education can impact on this. Central to this research was an examination of the relationship between ESD and music education, and an investigation of the SD-related impacts that music education for sustainable development can address. By offering an interdisciplinary research perspective on ESD, the first aim of this study was to explore the educational potential of a musical approach to SD learning, and the second was to find out whether and to what extent music learning can contribute to future citizens’ sustainable living. The following research questions were posed in accordance with the two main aims:

1. What is the feasibility of stimulating young people to make changes for a sustainable future through music learning and teaching?
 - a. *In what ways are the conceptual dimensions of sustainable development translated into music classroom teaching? Which teaching strategies can be employed?*
 - b. *What are the participants’ (both students and teachers) actions and interactions within the music lessons? How do they respond to the lessons in an emotional way?*

-
2. Can music play a transformative role in young people's knowledge, skills, attitudes and behaviours towards a sustainable model of development?
 - a. *Which specific ESD outcomes, in terms of knowledge, skills, attitudes and behaviours, may be achieved through the medium of music classroom learning?*
 - b. *What are participants' perceptions with regard to the relationship between music and sustainable development, and the potential role of music education in extending students' learning in ESD?*

The thesis explores the complex topic of SD and its relationship to music education. Through an extensive analysis of the collected data pertaining to these questions, it is demonstrated that music is useful for providing students with encouraging and meaningful opportunities and a positive learning environment for their SD learning. When engaging in learning activities which link music and SD together effectively students as empowered citizens can develop the necessary capabilities, including relevant knowledge, attitudes and skills, for contributing and creating positive changes for SD. As a result, this research makes contributions to the field of ESD. Results of this study can lead to the development of curricular and pedagogical models which underpin the adoption of music classroom teaching to facilitate students' range of learning in ESD, and the development of an underlying philosophy of education. The ways the music teachers used to develop the field of music education in the teaching of SD in this study, can offer practical assistance to other educators, who wish to use music in their future teaching work with regard to ESD.

7.2 The main findings of the research

7.2.1 Research question 1: *'What is the feasibility of stimulating young people to make changes for a sustainable future through music learning and teaching?'*

Music and SD are separately taught content in English schools. In this study, the possibility of using music to promote students' SD learning was explored by four music

teachers through preparing, undertaking and evaluating their own teaching intervention. It was demonstrated that the pedagogical links between the two disciplines exist and could be various: listening SD-related music (Schools A, B & C), watching SD-related musical videos (Schools A & C), singing and writing SD-related raps and songs (Schools A & C), soundtracking SD pictures and composing pieces of music (School B), and creating and performing junk musical instruments (School D).

The ESD pedagogies that the participating music teachers used were often problem/issue-based and integrated well with the music classroom activities in each school. Three main topics – what is sustainability, what are we doing which is unsustainable and how do we promote sustainability were taught through particular examples, chosen by each music teacher in accordance with their own interests, their importance, the possibility of linking it to music, students' interests and the level of accessibility. In the process of teaching, a range of instructional strategies, which may have influenced students' attentiveness and performance (Altun, 2005), were employed simultaneously to stimulate students' interest and participation. Most of the time, the music teachers used similar techniques and strategies for teaching SD. These involved discussion (Schools A, B, C & D), audio and visual learning activity (Schools A, B, C & D), kinesthetic activity (Schools D), competitive group activity (Schools A & D), game-based activity (Schools B, C & D) and brainstorming (Schools A, B & C).

The music-SD lessons in all schools contained both teacher-centred and student-centred learning. While the music teachers acted out different roles facing the students, such as director, provider, listener, facilitator, motivator, supporter and evaluator throughout the lessons, a variety of learning activities provided students with many opportunities to interact with each other. These students, with common learning aims and goals, were involved in collaborative group and paired-work in their music classrooms, and most of them worked as mutually supportive learners, which is probably useful in the development of their SD learning (McNaughton, 2008).

To avoid the potential negative effects in students' prospective progress in music learning and in teachers' fulfillment of their teaching plan throughout Year 7, the four music teachers strove to seek the appropriate links between the implementation of the National Curriculum (NC) and their own music curriculum and the achievement of students' learning outcomes of ESD. As a result, the four music teachers attempted to undertake music-SD in a similar way to the normal lessons. They covered and expanded three essential skills required by the NC: listening and appraising, composing, and performing, and used the same lesson structure in both normal and music-SD classes. In Schools A, B and C, most of the musical learning tasks and learning content were comprised in their Scheme of Work for Year 7.

In this study, almost all students in each school completed their learning tasks, and most of them successfully achieved the learning objectives. In terms of students' responses to the teaching intervention, although some students in Schools B and C showed surprise, puzzlement and reluctance at the beginning of the project, the great majority of students in Schools A, C and D and around half of students in School B eventually seemed to be keen on the engagement with the music-SD lessons. A number of them even expressed preferences for the lessons in comparison with the normal music lessons by the end of the intervention. Moreover, among a range of learning activities in music classrooms, the evidence suggested that students in the four schools apparently enjoyed learning about SD in a practical, musical and entertaining way, such as performing, rehearsing, composition, making instruments and watching musical videos, rather through purely oral or written forms, such as discussion, reading and paperwork. At the end of the project, some students expressed their willingness to join in this kind of classroom learning in the future with a number of suggestions, such as the provision of more time to do practical work, using more audio and visual resources for inspirations and learning more about SD.

7.2.2 Research question 2 – ‘Can music play a transformative role in young people’s knowledge, skills, attitudes and behaviours towards a sustainable model of development?’

As discussed in Chapter 2, central to ESD is the aim of developing learners’ knowledge, skills, positive attitudes and behaviours towards SD. There was evidence to suggest that music classroom learning could help students achieve these aims. Through engaging in a variety of learning activities in the music classrooms, students were empowered to increase their knowledge and understanding of the concept of SD, the impact of their present lifestyles on the sustainability of the earth, the need to lead more sustainable lives, as well as other relevant SD issues. They also learned to practise a number of skills necessary for taking actions for sustainability, including sustainability literacy, collaboration and leadership, communication, problem solving and decision making, creativity, and confidence. Moreover, the context of music seemed to be useful in sharpening students’ awareness and adopting an attitude in relation to SD concerns, which is likely to have a continuing influence in their subsequent behaviours. Linking learning to action, which inspired students to make a difference, is considered as the most successful work on SD (Ofsted, 2009). For a few students, the music-SD lessons brought about a positive change in their behaviours towards SD, and some of them also encouraged their families to re-examine their own lifestyles. Although the behavioural change did not occur for each student, a number of students felt that they would make some improvements on more sustainable lives in the future.

At the end of the project, while a small number of students viewed SD as an ‘add on’ to their musical learning, all the music teachers and most of the students had become aware of the relationships between music and SD. Meanwhile, the majority of students and the music teacher in each school also expressed positive attitudes towards learning SD through music to improve the achievement of ESD. Traditional learning activities related to ESD are always used by teachers as a platform inside and outside the classroom to instill the ideas of SD into secondary school students. This is considered counterproductive by Gayford (2009). By contrast, according to the feelings and

perspectives of all participants on the relationships between the learning of music and SD, the innovative approaches for SD learning within the context of music, which covered students' emotional, intellectual and social aspects of learning with an emphasis on autonomy, practicality, and creativity, appeared to be more effective. Participants' comments indicate that the learning activities in the music-SD lessons not only provided students with opportunities to construct and share their own knowledge and ideas concerning SD, but also captured most students' interest, motivation and positive affectivity, and thus promoted participatory and active learning as well as influenced their attainment of ESD. In addition, the findings suggest that SD has the potential to support and enhance students' music classroom learning simultaneously. Though a small number of students thought part of their time for learning music was occupied by learning SD, a lot of students considered that the incorporation of SD was helpful to arouse their interest in music learning, facilitate their further understanding of music and stimulate the production of their musical outcomes and musical product.

7.3 Implications of the findings

7.3.1 Implications for pedagogy

The findings of this study may have implications for pedagogy. As Ai (2009) and Zeng (2003) pointed out, whether or not teachers successfully perform the function of music education in environmental education largely depends upon their teaching strategy and pedagogy. As a result, the potential relationship between the four music teachers' pedagogy and the students' different achievement levels in terms of SD learning is explored in this section. The relevant information on each school's teaching intervention practice, including the teaching strategies, students' responses and their learning outcomes, which has been presented and discussed in Chapters 5 and 6, is summarised in Table 7.1, to provide a clear view of what happened in the four music classrooms, as well as for a further comparison.

Table 7.1: A comparison of four schools' teaching practices and outcomes

	School A	School B	School C	School D
Lesson No.	7 (one lesson per week)	6 (one lesson per week)	6 (two lessons per week)	6 (one lesson per week)
Main Tasks	<ul style="list-style-type: none"> • Singing a SD rap • Composing a SD rap 	<ul style="list-style-type: none"> • Composing two pieces of music on SD 	<ul style="list-style-type: none"> • Composing a rap or a song on SD 	<ul style="list-style-type: none"> • Making junk instruments • Composing rhythms for junk band performance
SD Activities	<ul style="list-style-type: none"> • Watching video • Looking at pictures • Discussing • Brainstorming • Reading lyrics • Writing lyrics 	<ul style="list-style-type: none"> • Looking at pictures • Discussing • Brainstorming • Paper work • Card sorting 	<ul style="list-style-type: none"> • Watching video • Discussing • Brainstorming • Writing lyrics • 'Exit Ticket' 	<ul style="list-style-type: none"> • Watching video • Discussing • Reading texts • Recycling and using
Students' Involvement	★★	★	★	★
The no. of students who showed positive attitudes towards music-SD lessons	62%	44%	74%	67%
The Music Learning Outcomes	★★★	★	★	★★
(The SD Learning Outcomes)				
Knowledge & Understanding	★★	★	★★	★
Skills	★★	★	★	★
Awareness & Attitudes	★★	★★	★★	★★
Behaviours	★★	★	★	★★

Note: The number of '★' = the degree of involvement and achievement

With a slight difference in the teaching approaches between the four schools, students' overall achievement of the ESD objectives was varied (see Table 7.1). Through a

comparison of students' learning activities, their feedback on these activities, and the level of their achievement among the four schools, the possible effective strategies, which have been listed in Table 7.2, can be identified and will be argued in the next paragraphs.

Table 7.2: The most effective teaching strategies for students' SD learning

	The possible conspicuous strategies for SD learning
Knowledge & Understanding	<ul style="list-style-type: none"> ● Brainstorming (Schools A, B & C) ● Writing lyrics (Schools A & C) ● Musical Videos (Schools A & C) ● Card sorting task – the meaning of SD concepts (School B) ● Discussion (Schools A, B, C & D)
Skills	<ul style="list-style-type: none"> ● Group/pair work – collaboration, cooperation and leadership, interpersonal communication, problem solving and decision making (Schools A, B, C & D) ● Practical work and performance – Creativity and confidence (Schools A, B, C & D)
Awareness & Attitudes	<ul style="list-style-type: none"> ● Pictures (Schools A & B) ● Musical works (Schools A, B, C & D)
Behaviours	<ul style="list-style-type: none"> ● Recycling, reusing and making junk instruments (School D)

According to the data indicated at the bottom of Table 7.1, the students in Schools A and C, who were involved in two common learning activities – watching musical videos concerning SD issues and writing lyrics, appeared to improve their understandings a little more than the students in the other two schools, although the classroom discipline in School C's music lessons was disappointing to the music teacher at times. As discussed in Chapters 5 and 6, composition, which gave students autonomy to acquire and construct knowledge of SD, promoted their individualisation of learning. Writing lyrics, as one part of composition in Schools A and C, empowered students to generate and express their own ideas on the meaning of SD and related issues, rather than to impose a particular definition and explanation on them. Moreover, the music videos in both schools' lessons not only transmitted SD-related messages to students, but also could be viewed as prompts and cues, which seemed to be useful in engaging them in self-directed thinking and learning (Siegesmund, 2004). Although the students in School D also watched SD-related videos, these non-musical videos with many technical words

were perceived by students to be boring and strange to be involved in the music lessons. Obviously, the selection of appropriate videos seems to be especially important. In addition to these, the 'card sorting task', which covered a number of SD concepts, and the informal oral assessments of the definition of SD in School B appeared to effectively improve students' memory and their ability to explain the meaning of SD and some relevant issues.

Secondly, the evidence suggested that the music-SD lessons in School A developed students SD-related skills, including sustainability literacy; collaboration, cooperation and leadership, communication, problem solving and decision making, generally better than the other participating schools. These provided students with more learning activities towards sustainability literacy (see Table 6.2), with opportunities to work with different classmates in different size groups, and with various learning tasks. Moreover, the competitive format of performance in Schools A and D played a vital role in promoting students' active participation in the team-based activities and cultivating their team spirit and the sense of collective honour simultaneously. Additionally, all students in the four schools were encouraged to employ their creativity and confidence to be engaged in a range of practical activities, such as composing, making junk instruments and performing. The findings indicate the better development of Schools A and D students' skills of creativity throughout the teaching intervention, and the lessons in both schools, with more opportunities for students to show their work and perform, and gain feedback, appeared to promote students' confidence more than in the other two schools. The students in School C also learned to compose a rap/song, but the percentage of students who thought their creativity had been promoted was the lowest among the four schools. One of the conjectural reasons for these results is that the approach that the music teacher in School C used to composition, which put a particular emphasis on the chord patterns and chord progression, might limit the students' creativity (Byrne & Sheridan, 2001).

Furthermore, the overall level of students' awareness and positive attitudes towards SD in each school was higher than before. As discussed in Section 6.3.2, the musical works,

as emotionally engaged learning activities, made a significant impact on the positive changes of students. Even though the changes in School B students' SD-related knowledge, skills and behaviours were not noticeable in comparison with other three schools, there was an obvious change in School B students' attitudes towards sustainable lifestyles. Two sets of pictures, which shocked the students and facilitated their deeper thinking, were likely to have played an important role in leading to these positive changes in students' minds. In terms of students' behaviours for sustainability, the music-SD lessons in Schools A and D seemingly made more contributions towards it. Compared to students in School D, who took more action on reusing and recycling after the teaching intervention, School A students' altered aspects of behaviours were broader. The whole music-SD unit in School D promoted a deep learning on '3R' (Reduce, Reuse & Recycle) with the hands-on activity of making junk instruments, which helped students experience and clearly understand how to connect the abstract concept of SD with their daily lives and how to put their earnest desire into practical actions.

The links between the level of students' engagement in learning activities and the improvement in their knowledge, attitudes and behaviours generally were identified by some school leaders in the UK (Ofsted, 2009). Among a variety of activities in the four music classrooms, the evidence suggested that the majority of students seemed to prefer the classroom activities, which combined the learning of music and SD together, and the students in School A appeared to show more enthusiasm for these activities. In School B, although the participating class of students showed interest in music before the teaching intervention programme, no more than half of students reflected positive attitudes to the cross-curricular learning of SD and music. This proportion of students was lowest among all sample schools (see Table 7.1). It can be inferred from the research data that a lot of paperwork without any connection to music might be one of the main factors for students' lack of interest and negative attitudes towards the music-SD lessons, which appeared to inhibit the effective teaching and learning in the music classroom to a certain extent.

It is obviously indicated in Table 7.1 that on the whole, the students in School A seemed more involved in a range of classroom activities and obtained better learning outcomes of

both music and SD, in comparison with the other three schools. The music-SD unit in this school, taught by the most experienced music teacher and which included one more lesson than the other participating schools, centered around one popular style of music – ‘rap’, with different forms of learning: listening, watching, discussing, singing, composing and performing. The popular style of music not only can play an active role in increasing students’ levels of interest and attentiveness compared with normal school music (Lamont et al., 2003), but also is regarded as an unsurpassed mode of ‘transmitting ideas, perspectives, emotions and language’, and a ‘motivating factor and valuable tool in the acquisition of skills and knowledge’ (Winter, 2004 p.238, 239). School C, with the highest rate of students who showed positive attitudes towards music-SD lessons among the four schools, also employed ‘rap’ to connect music teaching and learning with SD. However, the classroom discipline issues, which disrupted students’ learning environment in the music classroom to some extent, undoubtedly had a negative influence on other students’ academic achievement.

However, here, it seems to be injudicious to conclude that the pedagogy the music teacher in School A employed provided the greatest integration and effectiveness for teaching SD in music classrooms, since many factors could influence students’ learning outcomes, for example, the background of students and schools, the events happening around students during the teaching intervention, students’ attitudes to their music teachers, the interval of time between two lessons, and the physical conditions and resources in schools. Pedagogy is only one of the main factors.

7.3.2 Implications for the role of music education in SD learning

‘ESD implies a new idea of curriculum, based on meaningful subjects and interdisciplinary proficiency which contributes to building a feeling of belonging to the Planet’ (UNESCO, 2012a p.61). The findings suggested that among the various subjects in schools, music has special and inherent values, qualities and capacities to engage students in learning activities. In this thesis, the reason for combining music in a

cross-curricula way with ESD was to examine the role of music education in enhancing students' SD learning experiences.

According to different people's elaboration on what learning meant to them, Säljö (Marton & Säljö, 1984 p.52) summarised five qualitative conceptions of 'learning':

1. a quantitative increase in knowledge
2. memorising
3. acquisition of facts, methods, etc. that can be retained and used
4. the abstraction of meaning
5. an interpretative process aimed at understanding reality.'

This hierarchy was linked to the five conceptions of learning. Lowe (2013 p.326), Marton and Säljö (1984) and Van Rossumand and Schenk (1984) described the first three types of learning as 'surface' learning in which students tended to be passive and focused on specifics and memorising facts without a full understanding of the concept, and the last two types as 'deep' learning which is characterised by 'a broader understanding of the whole topic' through an active search for and construction of meaning. The music learning experiences in the PhD study covered both types of learning, with an emphasis on the latter. While students sometimes passively received the important facts and details about SD through, for example, teachers' explanations and textual materials, and were required to remember the meaning of some concepts of SD through repeating from memory, they were also provided with opportunities to extract meanings and messages from a variety of sources, such as videos, textual materials, pictures, songs and discussions with others. They could then construct and interpret their own thoughts through practical musical activities, to have a clear understanding of SD-related issues, which seemed to facilitate students' more active engagement and deeper approaches of learning SD. Whether this comprised the inclusion of raps, songs, pieces of melody or junk instruments in the ESD curriculum, valuable learning encounters were offered. If they must be compared, raps and songs appeared to be more effective in receiving and interpreting emotions, ideas and perspectives. Moreover, apart from the two types of deep learning, Lowe (2013) also mentioned a sixth level of learning – 'changing as a person', which is viewed as the deepest level of learning. The type of learning, which

aims to stimulate changes in students' perception of reality and even in themselves as a person, will be connected with 'transformative learning' below.

ESD, which is usually incompletely understood as teaching knowledge related to SD, 'in its broadest sense, is education for social transformation with the goal of creating more sustainable societies' (UNESCO, 2012a p.12), and the evidence from this PhD research demonstrated that music could be regarded as a valuable tool and motivating factor in the promotion of the transformation of education. As discussed in Section 6.3.1, two modes of learning – 'transmissive learning' and 'transformative learning' associated with ESD were distinguished by Biggs (1996) and Sterling (2001). The amount of 'space' allowed for 'participation, self-determination, autonomous thinking', 'knowledge co-creation' and learning by doing is important and ought to be created in the process of learning for SD (McNaughton, 2008; UNESCO, 2012a p.22). When the space is narrow, more teacher-centered, more instruction and transmissive approaches to ESD, which tend to transmit a body of knowledge by using didactic skills and supporting materials, are likely to emerge. On the contrary, when the space is wide, more student-centered, a more interactive and transformative form of ESD, which incorporates real SD-related transformation through moving from awareness to behaviours, will result (Biggs, 1996; Sterling, 2001; UNESCO, 2012a). The transmissive mode of learning is similar to the 'surface learning', and the transformative one, which puts more attention on learners' empowerment and capacity building for behaviour change (UNESCO, 2011b), appears to be the deep learning which changes a person. Between the two modes, the importance of transformative qualities to improve the effectiveness of teaching and learning strategies in ESD was emphasised by Sterling (2001) and UNESCO (2012a).

The process of learning is equally important to the learning content (UNESCO, 2012a). Compared to the subjects which usually lay particular stress on imparting knowledge of sustainability, such as geography, science and citizenship, the music learning experiences offered more opportunities with a larger amount of time to encourage the broader space for transformative learning. In this study, the ESD in the four music classrooms did not simply provide information through traditional ways, such as

presenting, lecturing and story-telling, but spent more time involving students in practical and collaborative activities to encourage them to be central in the co-creation and co-interpretation of meaning and knowledge, as well as to promote their independent, collective and critical thinking, autonomous determination, and active participation. In the meantime, the activities involving junk instruments in School D facilitated the practical applicability of knowledge, which made students' learning directly relevant to their daily lives and also helped them find solutions to real unsustainable problems that seemed to be more meaningful and focused than more theoretical learning. Moreover, it has been demonstrated in the thesis that a coherent interaction between music education and ESD in the interventions brought about a range of transformative outcomes, including positive changes in students' knowledge and understanding, skills, awareness and attitudes, and behaviours, which are essential for a successful establishment of a more sustainable future.

Affectivity, which is often linked with the emotion or feeling, and with the arts (Thrift, 2004), assumes tremendous and inevitable responsibilities towards the success of ESD (Wei, 2010). In this research, the affectivity, which was mostly produced within the musical context, learning activities and musical works, played an irreplaceable role in the promotion of students' transformative outcomes associated with SD, more specifically, in spearheading the advance in the formations of knowledge, attitudes and actions for SD. Firstly, as argued in Chapter 6, music, with the charm of its own, created a positive affective environment for students in the classroom, which was reflected in arousing their interest and positive attitudes towards the learning content, which in turn improved their memory and enhanced their cognitive learning. Furthermore, affect, as both 'a lived interior state' (Bell, 2010 p.95) and 'the property of the active outcome of an encounter' (Thrift, 2004 p.62), took the form of positively agitating the students' mind and increasing their ability to act. While 'the brain makes us ready for action' (Gray, 2002 p.66 cited in Thrift, 2004), affect, which 'fills the interval between perception and action' (Bell, 2010 p.95), is considered as a crucial element of yielding an action (Thrift, 2004). The students' affect was developed throughout the music-SD lessons. A girl in School B expressed her feeling that 'the music made me sometimes sad, sometimes excited,

sometimes moved.....I never got so strong feelings about environment before'. The importance of the emotional experience, which was gained from pieces of music, was recognised by the music teacher from that school: 'being a musician, I think the music can do anything. I think if the right people sing the right song, they can feel something and make a huge impact on their mind-sets'. However, the emotions that are triggered could be different among different people, and affect could also present in different ways at each encounter (Thrift, 2004). As a result, the level of students' affect and the impacts on ESD outcomes varied across the study.

7.3.3 Implications for the future work of governments, schools and ESD stakeholders

The evidence is provided in the thesis that ESD, 'as a thematic breeding ground' for curriculum innovation in schools (Rauch, 2002 p.44), has the potential of boosting students' capacities to support SD as well as producing their academic gains. In the study, even though the traditional educational scheme of secondary music subject was broken down by ESD and covered interdisciplinary, holistic and values-based learning with a multi-method approach, rather than pure subject-based studying, it was evaluated by many students as an important factor in improving their music learning. In spite of the fact that a small part of students' time for music learning was occupied by SD learning, according to the discussion of the findings in the end of Section 6.3, the interdisciplinary nature of students' learning experiences in the music-SD lessons, which mobilised some students' interest and made them concentrate more on the learning of music, afforded an easy way for these students to develop their understanding and practical skills of music, and thus stimulated the production of musical outcomes. On the other hand, as the music teacher in School B pointed out, the innovative teaching practice not only provided him with a unique chance to 'inspire' him and give him 'a whole bunch of new ideas' to improve his teaching approach, it also reminded him to reflect on the current curriculum and pedagogy and include some of these good ideas, such as 'the idea of the pictures stimulus'. As a result of these, all participating music teachers suggested to 'integrate it (SD) in the different way into the learning, and not just into the music, maybe should be

into the other arts subjects and for different year group students', in School A teacher's words. Geography, which is always considered to play a prominent role in building up students' knowledge and understanding of SD issues (Gayford, 2009), is not a compulsory subject for all stages in the UK. At this point, it is worth to recommend the governments, schools and ESD stakeholders to step up efforts to reform the current curriculum and provide a unity and coherence, which was supported by music and some of the other arts subject areas, within curriculum for students at all stages.

The research set music teachers thinking and engaging in the role of reflective practitioners. They not only reflected on the possibilities for implementing ESD in music education and the teaching strategies they employed, but also recognised the challenges and obstacles they met. The findings obtained from the music teachers' interviews revealed some challenges and barriers to more effective delivery of ESD in the music classrooms. Firstly, whether in the process of planning or at the end of the project, the participating music teachers felt that more knowledge and guidance on pedagogy for ESD, which could increase their confidence and pedagogical competence, especially the ability for mining appropriate content from curriculum to achieve the penetration of ESD in music teaching, were needed. It was asserted by Hargreaves and Fullan (1992 p.2) that 'a teaching force that is more skilled and flexible in its teaching strategies and more knowledgeable about its subject matter is more able to improve the achievement of its pupils'. Therefore, in order to fundamentally guarantee the quality and effectiveness of the implementation of ESD in schools, the governments, schools and ESD stakeholders are supposed to establish and extensively carry out pre-service and in-service teaching training programmes to support teachers in advancing relevant subject matter knowledge and pedagogical knowledge to improve their practice of teaching. Furthermore, the limited availability of concrete resources for cross-curricular teaching, which caused a change in learning content and pedagogy in School C, was mentioned by these music teachers during the planning stage as another influential factor in teaching. For solving the problem, it is advisable for governments, relevant organizations and ESD stakeholders to provide as many educational resources concerning SD, such as pictures, music, videos and some case studies of good practice, as possible in an easily

accessible manner. Moreover, some resource pools, music databanks and forums for ESD can be considered to be set on the net (Ai, 2009), which would enable teachers to exchange and share instructional recourses, experiences and opinions more conveniently.

7.4 Contributions to knowledge of literature

A number of significant contributions have been made in this thesis to the knowledge on SD, ESD and music education. In the meantime, valuable insights into the power of music, which is often ignored in the research area of SD and ESD, are provided. Firstly, this thesis contributes to a greater understanding of the affectivity of SD and of the feasibility and functions of transforming the conceptual and affective dimensions of SD in daily practical activities. Although some studies have reflected the emotional aspect of SD issues, mostly of environment or nature, the power of emotion for SD is still overlooked by the majority of researchers today (Cheng & Monroe, 2012; Kals, Schumacher & Montada, 1999). In SD-related schoolwork, the experience of emotional expression is usually minimised, in favour of facts, and this may hinder young people from developing an interest in, expanding their knowledge and understanding of, and transforming their commitment to SD in positive and meaningful ways (Österlind, 2012). The present research that provides some case studies in which students access and work with SD issues through music, further identifies the close relationship between affectivity and SD. It also examines and promotes further thinking about the use of emotions in a positive and constructive way for the achievement of SD. Moreover, as discussed in Chapter 2, while the transformative role of education is congruent with the requirement for a sustainable future, few literatures, especially the empirical researches, focus on the special role of education in practical works. In this thesis, the connection of students' transformative learning and SD within pedagogical case studies, contributes to this emerging literature. Furthermore, although the literature reviewed in Chapter 2 reveals the benefits of the revision of the National Curriculum for SD and the relationship between music and some SD issues, few discussions and successful working models of education programs for SD with a focus on pedagogies and very few researches on the

integration of SD and music classroom teaching and learning currently exist. This research, which informs the underlying philosophies relating to ESD, explores the appropriate pedagogies for teaching SD, and demonstrates the feasibility and effects of reorienting music education towards SD through the provision of an evidence base, fills the research gap.

7.5 Reflection on methodology, limits and further research

For a researcher, it is pivotal to critically reflect and evaluate the study, especially the research process and its results (Noguera, 2011). In this study, an ethnographical approach, based on constructionist and symbolic interactionist perspectives, was adopted as a means of gaining deep insights about the actual practices of ESD within secondary schools' music classrooms, students' educational outcomes relating to SD, and participants' perceptions. A school intervention, in which a music-SD teaching programme was implemented, was developed with a total of four music teachers and four classes of Year 7 students from four secondary state schools in different boroughs of London. Meanwhile, a range of techniques for data collection, including documentation, observations, questionnaires and interviews, was employed. It seems that applying the various techniques worked effectively to find answers to the research questions. The rich, valid and reliable data that was obtained through using these different techniques, allowed the making of thematical categorizations and comparisons for the final analysis, discussion and presentation.

Nevertheless, there are still several areas that could be improved, if the study would be replicated. Firstly, according to the findings from classroom observations and suggestions of the music teacher in School A, condensing the content of the questionnaires 'would be perfect for all students' (Mr. Campbell, School A). In view of some students' poor command of English, it was hard for them to understand the questionnaires within limited time available, so additional support and explanation were offered to them. Moreover, some boys, who were usually unable to continuously

concentrate on paperwork and exams according to their music teachers, completed the questionnaires with less interest and patience. In order to improve the reliability of data from questionnaires, the music teacher in School A suggested to design the questionnaires in a more condensed way. Another idea he put forward was to have computer-based questionnaires, which might engage these boys. Secondly, due to music teachers' busy schedules of work, the self-evaluation form for music teachers did was not, in the event, an effective technique for data collection. Music teachers forgot to complete it, in spite of my kind and gentle reminders between times, even though they thought the content and design of the form and the way of gaining teachers' reflective viewpoints for each lesson were good. Therefore, in future, it might be advisable to send the form to them after each lesson, rather than send once. Furthermore, a suggestion from the music teacher in School B is that each teacher plans their own music-SD lessons around 'an initial stepping stone' – a definite idea of the content. As he stated,

'It might help the teacher to plan it, and allows you (researcher) potentially to track the success of the teaching more. Because if you know people are starting from the same starting point, you can then compare lesson planning between different teachers and the outcomes as well.'

This idea was considered carefully several times before implementing the research. Due to the freedom of lesson planning I wanted to give to these teachers, and their choices of the teaching content as one part of their planning work that I expected to be discovered, no SD topics for teaching was recommended. In retrospect, it would have been useful to have adopted this approach.

Due to the time and cost constraints of the PhD, there are a number of limitations in the research. For extending the thesis's contribution, some new directions with potential for future research should be taken into account and noted in the thesis. Firstly, the scale of this study was small, especially the sample size, and it was difficult to make any alterations in the selections of samples. A larger sample size with a more diverse range of participants, which facilitates more comprehensive and robust evidence, could be employed in further research. For example, the implementation of the teaching intervention with students from different year groups in a school or from various family

backgrounds, working with secondary schools in different cities, and working with both male and female music teachers in view of the effects of gender difference in teachers on students' learning (Gold & Reis, 1982; Good, Sikes & Brophy, 1973; Jones & Wheatley, 1990;). It would be interesting to explore more participants-based and school-based variables for a parallel study. Moreover, the music teacher in School B suggested a longer teaching intervention programme for producing and identifying a stronger influence on students' learning outcomes of SD, and it could also be valuable to have a few additional visits in each school some months after the intervention to evaluate the longer-term effects of the teaching practice. In addition, through discussions with the four music teachers in the study, it was discovered that their knowledge and understanding, awareness and attitudes, and behaviours towards SD were, in varying degrees, also developed by the engagement in the teaching intervention, which is worth being further investigated in the future.

This research has provoked me to do future research based on extending the cross-curricular possibilities of the integration between music education and ESD and further exploring pedagogic possibilities. The relationships between music and SD and the potential role of music in improving students' SD learning will be further examined through teaching practices. It is envisaged to write a handbook based on the pedagogical ideas and lessons drawn from the four case studies to provide help and support for teachers, educators and schools for their future ESD or music lessons. Therefore, the PhD project can be viewed as the beginning of a journey towards constituting a link between music and SD as well as exploring the distinctive role of music in ESD, rather than as an end.

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Appendices

Appendix 1: Pre-teaching questionnaire for students



Contact for this project:
Yusi Cheng
yusi.cheng@brunel.ac.uk
0044 - (0)7827 336126

School of Sport and Education
Brunel University
Uxbridge
UB8 3PH

The survey designed by a PhD student at Brunel University, is conducted to provide an example of integrating 'Sustainable Development' in secondary music classroom in London. As part of this study in three secondary schools, I am interested in finding out your perceptions, as well as the effectiveness of a teaching intervention. Your head teacher, music teacher and parents are in agreement with this research.

I would appreciate you spending a few minutes filling in the questionnaire. There are no right or wrong answers. Just be honest about the way you feel. All responses are *confidential* and *anonymous*. If you have any questions, please contact me on the above phone number/email address. Thank you for your help.

General information

I am _____ years old. I am a: _____ (boy/girl). Nationality: _____

Section 1: The knowledge and awareness of Sustainable Development

1. Have you heard of the concept of 'Sustainable Development' before?

	<i>Tick one</i>
Yes. I know what it is.	
Yes, but I cannot remember its meaning	
No	
Have no idea	

If you tick 'Yes. I know what it is.', please answer the following two questions:

- a. When and how did you first hear about that? _____
b. What do you know about 'Sustainable Development'?

2. Are you worried about the following issues now?

	<i>Circle as appropriate</i>			
	Very worried	A little worried	Not really worried	Not worried at all
a. Climate change				

b. Global warming				
c. Air pollution (e.g. motor vehicle and industrial pollution)				
d. Loss of biodiversity (loss of species)				
e. Waste of energy (e.g. electricity, natural gas, coal and oil)				
f. Inequality among people from different countries and places				
g. Inequality between men and women				
h. Inequality between rich and poor				
i. Water quality and quantity				
j. Food quality				
k. Health				
l. Crime				
m. Waste generation and management (e.g. recycle and reuse)				
n. Traffic jam				
o. Disasters (e.g. flooding, earthquake)				
p. Desertification (the process of forest or grassland transforming into desert)				

3. Please Circle the level of your agreement with the following statements:

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
a. Plants and animals on the earth exist only for human use.			?		
b. Loss of plants and animals would not affect people's future life.			?		
c. I am interested in learning new ways to help protect the earth.			?		
d. Nature is easily harmed and hurt by people.			?		
e. Science and technology can overcome environmental problems.			?		
f. The next generation will find a solution to environmental problems, so we don't need to worry about these problems too much now.			?		
g. Mastering knowledge and skills for future job are more important than protecting the Earth's life support systems.			?		
h. Natural resources will not run out.			?		
i. The earth is very rich in various natural resources. Do not worry about the shortage			?		

j. Climate change will kill plants and animals, and harm human beings.					
k. Being environmentally friendly is something that other people should do, not me.					
l. Renewable energy will not run out, and other sources of energy are finite and will some day be depleted.					
m. Reducing your waste is important for establishing a better living place in the future.					
n. Compared with the fast and convenient services that cars provide, vehicle pollution is not important.					
o. More restrictions on industry are needed to stop pollution.					
p. Women should have equal rights with men.					
q. I am prepared to suffer some inconveniences for a better tomorrow.					

Section 2: The behaviours towards Sustainable Development

4. What types of items do you regularly recycle in your daily life?	<i>Tick as appropriate (you can tick more than one options)</i>	
	<input type="checkbox"/>	<input type="checkbox"/>
Glass	<input type="checkbox"/>	<input type="checkbox"/>
Mobil Phones	<input type="checkbox"/>	<input type="checkbox"/>
Newspapers	<input type="checkbox"/>	<input type="checkbox"/>
Magazines	<input type="checkbox"/>	<input type="checkbox"/>
Bottles/Cans	<input type="checkbox"/>	<input type="checkbox"/>
Mixed paper	<input type="checkbox"/>	<input type="checkbox"/>
Cardboard	<input type="checkbox"/>	<input type="checkbox"/>
Sneakers/shoes/clothes	<input type="checkbox"/>	<input type="checkbox"/>
Batteries	<input type="checkbox"/>	<input type="checkbox"/>
Electrical waste	<input type="checkbox"/>	<input type="checkbox"/>
Nothing	<input type="checkbox"/>	<input type="checkbox"/>
Others (Please specify):	<input type="checkbox"/>	<input type="checkbox"/>

5. Please indicate how often you have following activities by *tick*ing the option that best represents you.

	Always	Often	Sometimes	Seldom	Never
a. Water conservation (e.g. Limit shower time, turn off the water while brushing your teeth)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Save electricity (e.g. Turn off computer and lights when not in use)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

c. Lower thermostat when leaving the room					
d. Take good care of animals and plants					
e. Walk or cycle short distances					
f. Not use plastic bags					
g. Do more recycling and reusing					
h. Buy and eat locally grown fruit and vegetables when they are in season					
i. Pay more for products whose production and packaging does not damage to the environment					
j. Find out more about Earth from TV, books, internet or talking to people					
k. Participate in activities about environment, climate change and health in your school					
l. Participate in outdoor experiences such as camping and fishing					
m. Your parents or teachers encourage you to care for the environment.					
n. I'd like to do more to be climate, nature and environment friendly, but I don't know what I should do.					
o. I'd like to do more to be climate, nature and environment friendly, but there are things that stop me.					

6. How often do you encourage your friends or families to change their activities in the areas listed below?

	<i>Tick as appropriate</i>				
	Always	Often	Sometimes	Seldom	Never
a. Water conservation (e.g. Limit shower time, turn off the water while brushing your teeth)					
b. Save electricity (e.g. Turn off computer and lights when not in use)					
c. Lower thermostat when leaving the room					
d. Take good care of animals and plants					
e. Walk or cycle short distances					
f. Not use plastic bags					
g. Do more recycling and reusing					
h. Buy and eat locally grown fruit and vegetables when they are in season					
i. Pay more for products whose production and packaging does not damage to the environment					
j. Find out more about 'Sustainability' from TV, books, internet or talking to people					
k. Participate in activities about environment, climate change and health in/out your school					

Section 3: About Education for Sustainable Development

7. What's your attitude towards learning about the 'Earth', including environment, health and climate change etc.? Why?

	<i>Tick one</i>		<i>Tick one</i>
Very interested in it		It's necessary to learn it	
Interested in it		It's unnecessary to learn it	
Not interested in it		Not sure	
*Reasons:		*Reason:	

8. Which subjects are helpful to you to learn about the environment, health and climate change?

	<i>Tick as appropriate</i>		<i>Tick as appropriate</i>
English		Maths	
Science		Geography	
History		ICT	
Modern foreign languages		Design and technology	
Art and design		Music	
P.E.		Citizenship	
Drama		Religious education	

9. What is your opinion about the relation between music and environment?

	<i>Tick one</i>
They are closely related to each other	
They are related to each other	
They are a little related to each other	
They are unrelated to each other	

10. Is it a good idea to learn something about environment, health or climate change in your music lessons? Why?

	<i>Tick one</i>	Please write the reasons:
Yes		
No		
Not sure		

11. What are your general impressions of the music lessons in your current school? Do you like them? Why?

Thank you for taking the time to fill in this questionnaire

Appendix 2: Post-teaching questionnaire for students

(Take School C's questionnaire as an example)

Brunel
UNIVERSITY
WEST LONDON

Contact for this project:

Yuzi Cheng

yuzi.cheng@brunel.ac.uk

0044 - (0)7827 336126

School of Sport and Education

Brunel University

Uxbridge

UB8 3PH

General information

I am _____ years old I am a: _____ (boy/girl) Nationality: _____

Section 1: The knowledge and awareness of Sustainable Development

		<i>Tick one</i>
1. Do you know the meaning of 'Sustainable Development'?	Yes	
	No	
	Not sure	
*If you tick 'Yes', please write what you know about 'Sustainable Development' below:		

2. What are you doing which is unsustainable? Please write down as much as you can below.

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3. Are you worried about the following issues now?

	<i>Circle as appropriate</i>			
	Very worried	A little worried	Not really worried	Not worried at all
a. Climate change				
b. Global warming				
c. Air pollution				
d. Loss of biodiversity (<i>loss of species</i>)				
e. Waste of energy (<i>e.g. electricity, natural gas, coal and oil</i>)				
f. Inequality among people from different countries and places				
g. Inequality between men and women				
h. Inequality between rich and poor				
i. Water quality and quantity				
j. Food quality				

k. Health				
l. Crime				
m. Waste generation and management (e.g. recycle and reuse)				
n. Traffic jam				
o. Disasters (e.g. flooding, earthquake)				
p. Desertification (the process of forest or grassland transforming into desert)				

4. Please Circle the level of your agreement with the following statements:

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
a. Plants and animals on the earth exist only for human use.			?		
b. Loss of plants and animals would not affect people's future life.			?		
c. I am interested in learning new ways to help protect the earth.			?		
d. Nature is easily harmed and hurt by people.			?		
e. Science and technology can overcome environmental problems.			?		
f. The next generation will find a solution to environmental problems, so we don't need to worry about these problems too much now.			?		
g. Mastering knowledge and skills for future job are more important than protecting the Earth's life support systems.			?		
h. Natural resources will not run out.			?		
i. The earth is very rich in various natural resources. Do not worry about the shortage of one or two in particular.			?		
j. Climate change will kill plants and animals, and harm human beings.			?		
k. Being environmentally friendly is something that other people should do, not me.			?		
l. Renewable energy will not run out and other sources of energy are finite and will some day be depleted.			?		
m. Reducing your waste is important for establishing a better living place in the future.			?		
n. Compared with the fast and convenient services that cars provide, vehicle pollution is not important.			?		

o. More restrictions on industry are needed to stop pollution.					
p. Women should have equal rights with men.					
q. I am prepared to suffer some inconveniences for a better tomorrow.					

Section 2: The behaviours and skills towards Sustainable Development

5. Please indicate how often you will have following activities by *tick*ing the option that best represents you.

	I will do that and persuade other people to do that	I will do that	I may do that at some times	I will not do that	Not Sure
a. Water conservation (e.g. Limit shower time, turn off the water while brushing your teeth, etc.)					
b. Save electricity (e.g. Turn off computer and lights when not in use)					
c. Lower thermostat when leaving the room					
d. Take good care of animals and plants					
e. Walk or cycle short distances					
f. Not use plastic bags					
g. Do more recycling and reusing					
h. Buy and eat locally grown fruit and vegetables when they are in season					
i. Pay more for products whose production and packaging does not damage to the environment					
j. Find out more about 'Sustainability' from TV, books, internet or talking to people					

6. Will you persuade your family to be greener?

	<i>Tick one</i>
Yes	
No	
Not sure	

7. Will you volunteer for a cleaner and better environment in any way whatsoever? Please write the reasons of your choice in the last column.

	<i>Tick one</i>
Participate actively, and call on my friends and parents to join.	

If many people participate, I would also join them.	
I would not participate, unless my parents require me to do.	
Others, please specify:	
*Reasons: _____	

8. Which skills did you learn during the 3-weeks music lessons?

	<i>Tick as appropriate (you can tick more than one options)</i>
Communication – using words and actions	
Co-operating with classmates	
Using memory	
Problem solving	
Creativity – using different ways (e.g. music, words and hands) to achieve the desired results	
Interpreting information and ideas	
Making informed choices	
Understanding the relationship between human and nature	
Self-discipline	
Confidence	
Critical thinking	
Other skills (please specify):	

Section 3: Music Subject and Education for Sustainable Development (ESD)

9. What is your current opinion about the relation between music and 'Sustainable Development'?

	<i>Tick one</i>
They are closely related to each other	
They are related to each other	
They are a little related to each other	
They are unrelated to each other	

10. Is it a good idea to connect 'Sustainable Development' with music in your music lessons? Why?

	<i>Tick one</i>
Yes	
No	
Not sure	
*Please write the reasons:	






















































































11. What is your attitude towards learning about 'Sustainable Development'? Why?






	<i>Tick one</i>
Very interested in it	
Interested in it	

Not interested in it	
Sick and tired of this	
*Reasons: _____	

Section 4: Evaluation of the 3-weeks Teaching Intervention

12. Please *Circle* the level of your enjoyment with the different activities in the 6 music lessons.

	Like a lot	Like	Neutral	Dislike	Strongly Dislike
Watched music videos					
Watched video on 'Sustainable Development'					
Discussed musical things with teacher					
Discussed topics on 'Sustainable Development' with teacher					
Brainstormed 'what are we doing which is unsustainable'					
Answered on a post-it note and stuck on the whiteboard					
Wrote answers to questions on the sheets					
Wrote lyrics for your own song/rap					
Wrote a melody for your own song/rap on the keyboard					
Combined your lyrics and melody to create your song/rap.					
Communicated and worked with your partner					
Listened to 3 examples of music played by the teacher and tried to describe the different mood					
Learnt to play the 'Chord Patterns' on the keyboard					
Selected the suitable chord patterns for your own song/rap.					
Listened to the teacher's explanations on how to write your own song/rap					
Performed the chord patterns or your song/rap to the class					
Assessment					

Listened to and watched the teacher's performance					
Other activities you liked or disliked (please specify):					

13. Do you have any changes through the 3-weeks music learning? You can tick more than one option.

	<i>Tick as appropriate</i>		<i>Tick as appropriate</i>
Increased your interest in 'Sustainable Development'		Increased your interest in music learning	
Decreased your interest in 'Sustainable Development'		Decreased your interest in music learning	
Know more about 'Sustainable Development'		Know more about 'Composition'	
Change the way I feel about the 'Earth'		Get practical skills on composing and performing	
Change my environment-related behaviours		Made learning of music easier	
Made learning of 'Sustainable Development' easier		Have a bad effect on my music learning	
Have a bad effect on my learning of 'Sustainable Development'		Have no impact and acquisition	
Others, please specify: _____			

14. Please choose the suitable mood (1. Happy; 2. Sad; 3. Confused) for each kind of tonality.

Tonality	<i>Major</i>	<i>Minor</i>	<i>Atonal</i>
Mood			

15. Please write down a short evaluation of how you worked on creating your own song/rap.

--

16. Have you talked with your friends or parents about 'Sustainable Development' recently?

	<i>Tick one</i>
Yes	
No	
Not sure	
If 'Yes', which topics did you talk about?	

Good  Job!

Thank you for taking the time to fill in this questionnaire

Appendix 3: Observation guide

Observation Guide

- **The physical environment**

1. The environment of school: The location, campus culture, buildings, daily schedules of teachers and students.

2. The arrangement of music teacher's office: the furniture arrangement, general condition of the office, wall displays and the teacher's desk displays.

3. The arrangement of music classroom: the arrangement of furniture and musical equipment, general condition of the classroom, wall displays and seating arrangement of students and teacher.

4. Students in the Class: the number of boys and girls.

- **Teaching planning**

5. How does the music teacher further understand the concept of sustainable development and the objectives of ESD? How does he find resources for the teaching? (website, books, journals, asking people, etc.).

6. How does he engage with the task? (With interest/lack interest, face difficulties, joy, impatience, etc.).

7. Observe and communicate with him and find out his inner feelings and opinions on the planning work from their facial and verbal expression.

• Teaching content and process

8. How does the lesson begin? What happens next? How does the lesson end? (Note the detailed structure and sequence of the lesson and the time used for each section of the lesson).
9. What is taught? Which topic of sustainable development is chosen? Which songs and pieces of music are taught?
10. What teaching methods are employed? (Singing, dancing, composing, talking, discussing, question answer, etc.).
11. In what ways does the teacher integrate sustainable development into the music curriculum?

Note: See if there are any handouts or materials being used, ask permission to keep a handout if possible.

- **Children's participation and reactions**

12. How and to what extent do the students participate in the class? What is the nature of their participation? (Singing, dancing, composing, listening, playing instruments, discussing, asking questions, disengagement, etc.).

13. How do they engage with the tasks? (With interest/lack interest, follow instructions, face difficulties, doing something else etc.).

14. Communicate with them and find out their inner feelings and opinions on the teaching and musical activities in the classes from their facial and verbal expressions.

15. How do the children interact with each other and the music teacher? (Note the content of conversation and their facial expression).

- **Conclusion**

16. Thank the music teacher and students, and write up the notes from the observation and audio-record on the day.

Appendix 4: Pre-teaching interview schedule – music teacher



Contact for this project:
 Yusi Cheng
yusi.cheng@brunel.ac.uk
 0044 - (0)7827 336126

School of Health Sciences and Social Care
 Brunel University
 Kingston Lane
 Uxbridge
 UB8 3PH

May 2012

Title: 'Exploring students' learning of sustainable development through music education: an exploratory study in Key Stage 3'

Introduction

- about me
 - about the project
 - consent on participation, audio recording, reminder of option to withdraw at any time
- **The concept of 'Sustainable Development' (SD) and 'Education for Sustainable Development' (ESD)**
 1. Did you know the concept of 'sustainable development' (SD) and 'education for sustainable development' (ESD) before?
 - If 'yes':
 - a. How did you first hear about and know them?
 - b. Could you talk about the meaning, implication and anything else about the two concepts? Which issues or topics about them are you interested in?
 - c. How did you obtain the knowledge about SD and ESD?
 - d. What do you think about when you hear the words SD and ESD?
 2. Could you tell me your current understanding of SD and ESD?
 - c. Do you experience any difficulties in understanding the concept of SD?
 - d. Are you concerned about unsustainable problems (give examples if needed, e.g. global warming, environmental problems, poverty, social inequality, unemployment, loss of biodiversity and unsustainable consumption, etc.) in your lives?
 - e. Did you talk with your friends or family about these issues? If 'yes', what did you talk about? How often?

f. Did you do something in your life or participate in some activities related to these issues before?

g. Do you think the issues on SD are related to music and music learning? Why?

● **The experiences on teaching**

8. Have you done some cross-curriculum work in your lessons before?

- If 'yes':

a. Which subject and content did you incorporate in?

b. In what ways did you do that in your lessons?

c. Are there any effects of that programme? What are children's opinions or feelings on that?

9. Have you brought issues on SD into your lessons before?

- If 'yes':

a. Could you talk about the content and the teaching process?

b. Do you think it is a good idea to learn SD in music lessons? Why?

10. Which kind of teaching style and teaching methods do you like to use in your general lessons?

11. Do you know how SD has been incorporated in your school?

● **The design of music-SD lessons**

12. Could you describe in details your design of the 6 lessons?

13. What musical objectives and SD objectives did you set for each lesson?

14. Which issues and topics about SD did you choose to incorporate into your curriculum?

15. Why were these topics, songs and music chosen?

16. How was the sustainable development aspect incorporated into the objectives?

17. In what ways was the topic simplified for these children?

18. How are you going to check student understanding and mastery of objectives?

19. Which year group will you choose to teach? Why?

20. What challenges did you face in planning this work?

21. Did you anticipate any difficulties that you will experience during the teaching?

Appendix 5: Post-teaching interview schedule – music teacher



Contact for this project:
 Yusi Cheng
yusi.cheng@brunel.ac.uk
 0044 - (0)7827 336126

School of Health Sciences and Social Care
 Brunel University
 Kingston Lane
 Uxbridge
 UB8 3PH

May 2012

Title: 'Exploring students' learning of sustainable development through music education: an exploratory study in Key Stage 3'

Introduction

- ice breaker (if needed!)
- consent on participation, audio recording, reminder of option to withdraw at any time

● Teaching Strategy

1. What is your general impression of the lessons? What about the teaching design?
2. Which teaching strategies were chosen? Why these strategies? Are there any differences on the teaching methods with the music lesson before?
3. In what ways was the concept of SD simplified for students?
4. Did you change your teaching method or the content during the 4 lessons? Why changed?
5. Did any difficulties arise in the teaching sustainable development in music lessons? How were these resolved?
6. What was particularly successful?

● Children's responses

7. How did the children respond to the teaching? Can you give an example?
8. Did students behave differently in the 6/7 lessons in comparison with the normal lessons?

9. What were some of the things that they did in music you remembered as particularly surprising or worked well?

10. Do you think they can learn anything about sustainable development and make some changes in themselves through music learning? Why?

11. Did students behave differently when I observed your lessons?

● **Evaluation of the teaching**

12. Were the objectives achieved?

13. What is your current opinion about the project on music education for sustainable development?

14. What did you think about the music might affect people's sustainable future?

15. Would there be anything if you were doing the lessons again you would look or suggest?

16. Did you get any other inspirations on this teaching attempt for the future work?

● **Changes in teachers' attitudes and behaviours on SD**

17. Has the project changed the way you feel about SD and ESD?

18. Do you now feel like you can help tackle some of the environmental or social challenges facing?

19. Do you think taking part in this project could change your own SD-related actions (for example conserving energy, recycling, walking instead of driving etc.)?

20. Have you shared some of what you teach with your colleagues, friends or families? If 'haven't', why not? Will you do that?

21. Did you enjoy the lessons? Would you like to integrate SD into your future lessons?

22. What do you think about the research project? Could you provide some suggestions for improving the project?

Note: The other questions of the discussion in this part were related to what happened in the music lessons, teachers' own self-evaluation and students' answers from the questionnaires.

Appendix 6: Post-teaching interview schedule – students



Contact for this project:
 Yusi Cheng
yusi.cheng@brunel.ac.uk
 0044 - (0)7827 336126

School of Health Sciences and Social Care
 Brunel University
 Kingston Lane
 Uxbridge
 UB8 3PH

May 2012

Title: 'Exploring students' learning of sustainable development through music education: an exploratory study in Key Stage 3'

Introduction

- about me
- about the project
- ice breaker (if needed!)
- consent for participation, audio recording, reminder of option to withdraw at any time

• Responses to the teaching

1. Do you remember what you did in the 6 music lessons? Could you tell me anything about them?
2. Could you tell me what you remembered most in the 6 lessons? Why does that stand out in your mind?
3. Do you think these lessons are different from the music lessons before? If 'yes', what are the differences? Which lesson do you prefer?
4. What did you learn from these lessons?
5. Did you learn anything about 'sustainable development' (SD) in the lessons?
 - If 'yes':
 - a. What did you learn?
 - b. Have you learnt anything similar in other subjects?
 - If 'yes':
 - a) What are the differences between learning SD in music lessons and in other lessons?

b) Which is more interesting?

c) Which lesson helps you to remember things about SD better?

d) What are your favourite ways to learn about sustainable development?

c. Can you think of a lesson or a musical activity that made you excited about SD?

d. Do you think this is a good idea to learn sustainable development through music?
If 'yes', why? If 'not', why not?

- If 'no':

a. Do you like music? Do you like learning in music lessons?

b. Do you learn anything in music?

6. Which music lesson did you like best? Why?

7. Which music lesson did you like least? Why?

8. Which music lesson did you learn most on SD? Why?

9. Which lesson did you learn least on SD? Why?

10. What was your favourite way of learning SD in the 6 lessons?

11. What did you think about this project? Would you like to have the teaching experience again?

• **Conceptions and attitudes**

12. Which issues or topics about sustainable development interested you most?

13. Do you think taking part in this project has changed how you feel about SD?

14. What do you think about the worst SD problems?

15. Is it useful to learn SD in your music lessons? If 'yes', why? If 'not', why not?

• **Behaviours**

16. Have the 6 lessons changed your behaviours? Have you done anything differently?

17. Have you talked with your parents or friends about SD recently?

- If 'yes',

a. What did you talk about?

b. Did your talking influence their attitudes or behaviours on SD?

- If 'not', do you feel like sharing some of what you learned with them?

18. Are there any other changes in yourself or your classmates after the unit of lessons?

Note: The other questions of the discussion in this part were related to what happened in the music lessons and students' answers from the questionnaires.

Appendix 7: Draft written consent form for headteachers



Contact for this project:

Yusi Cheng

yusi.cheng@brunel.ac.uk

0044 - (0)7827 336126

2012-2013

School of Health Sciences and Social Care

Brunel University

Kingston Lane

Uxbridge

UB8 3PH

CONSENT FORM for Project on 'Exploring students' learning of sustainable development through music education: an exploratory study in Key Stage 3' (For Headteacher)

1. I confirm that I have read and understand the leaflet for the above study and have had the opportunity to ask questions.	Please initial box <input style="width: 100%; height: 100%;" type="text"/>
2. I understand that the participation of the school is voluntary and that I am free to withdraw at any time, without giving reason.	<input style="width: 100%; height: 100%;" type="text"/>
3. I agree that the music teacher and students in our school can take part in the above study.	<input style="width: 100%; height: 100%;" type="text"/>
4. I agree that the lessons can be observed and audio recorded.	Please tick box YES NO <input style="width: 50%; height: 100%;" type="checkbox"/> <input style="width: 50%; height: 100%;" type="checkbox"/>
5. I agree that the interviews with students and teacher can be audio recorded.	<input style="width: 50%; height: 100%;" type="checkbox"/> <input style="width: 50%; height: 100%;" type="checkbox"/>
6. I agree that anonymous extracts from students' works, teacher's teaching plans and evaluations produced in the study can be used publicly (for thesis reports and publications).	<input style="width: 50%; height: 100%;" type="checkbox"/> <input style="width: 50%; height: 100%;" type="checkbox"/>
7. Images of the school, students and teacher appropriately anonymised/ blurred can be used publicly.	<input style="width: 50%; height: 100%;" type="checkbox"/> <input style="width: 50%; height: 100%;" type="checkbox"/>

I agree to Brunel University recording and processing this information about me. I understand that this information will be used only for the purpose(s) set out in this statement and my consent is conditional on the University complying with its duties and obligations under the Data Protection Act 1998.

Name of Participant Date Signature

Name of Researcher Date Signature

Appendix 8: Draft written consent form for participants



Contact for this project:

Yusi Cheng

yusi.cheng@brunel.ac.uk

0044 - (0)7827 336126

2012-2013

School of Health Sciences and Social Care

Brunel University

Kingston Lane

Uxbridge

UB8 3PH

CONSENT FORM for Project on 'Exploring students' learning of sustainable development through music education: an exploratory study in Key Stage 3' (For Participants)

1. I confirm that I have read and understand the leaflet for the above study and have had the opportunity to ask questions.	Please initial box <input style="width: 100%; height: 100%;" type="text"/>
2. I understand that my participation is voluntary and that I am free to withdraw/quit at any time, without giving reason.	<input style="width: 100%; height: 100%;" type="text"/>
3. I agree to take part in the above study.	<input style="width: 100%; height: 100%;" type="text"/>
4. I agree that my lessons can be observed and audio recorded.	Please tick box YES NO <input style="width: 50%; height: 100%;" type="checkbox"/> <input style="width: 50%; height: 100%;" type="checkbox"/>
5. I agree that the interviews can be audio recorded.	<input style="width: 50%; height: 100%;" type="checkbox"/> <input style="width: 50%; height: 100%;" type="checkbox"/>
6. I agree that anonymous (without your name) extracts from students' works, teacher's teaching plans and the evaluations produced in the study can be used publicly (for thesis reports and publications).	<input style="width: 50%; height: 100%;" type="checkbox"/> <input style="width: 50%; height: 100%;" type="checkbox"/>
7. My images appropriately anonymised/ blurred (cannot be recognised) can be used publicly.	<input style="width: 50%; height: 100%;" type="checkbox"/> <input style="width: 50%; height: 100%;" type="checkbox"/>

I agree to Brunel University recording and processing this information about me. I understand that this information will be used only for the purpose(s) set out in this statement and my consent is conditional on the University complying with its duties and obligations under the Data Protection Act 1998.

Name of Participant	Date	Signature
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Name of Researcher	Date	Signature
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Appendix 9: Information leaflet for music teachers



Exploring students' learning of sustainable development through music education: an exploratory study in Key Stage 3

Contact for this project:
Yusi Cheng
yusi.cheng@brunel.ac.uk
(0044) 7827 336126

INFORMATION LEAFLET (For music teachers)

I would like to invite you to take part in a research project. Before you decide whether to take part, I'd like to tell you more about the research and what it would involve for you.

10 points about the research:

1. What is the purpose of the study?

This project aims to identify the transformative role of education towards Sustainable Development (SD), and to investigate British music teachers' teaching approaches for implementing Education for Sustainable Development (ESD) in KS3 classrooms.

2. Why have I been invited to take part?

This research will be undertaken in three secondary schools in London. You have been invited to take part as you are teaching the 'future citizens' in a 'sustainable school' in London. I hope to get information from a teacher who is currently in a 'sustainable school' in London and also teaching KS3 music curriculum now.

3. Do I have to take part?

No. Participation in the project is entirely voluntary. Before I begin the research, I will ask you if you would like to take part. If you choose to participate, once the research has begun, you are free to stop taking part at any time without giving a reason.

4. What will happen if I take part?

If you agree to take part, you will be invited to participate in an ethnographical case study research, which will consist of 6 music lessons and a before and after interview. The whole research will happen during the school day on school premises within two months, and I will discuss with you how I can mostly usefully provide you with outcomes of the research.

5. What are the benefits of taking part?

This research will work with the music teacher to develop the school's provision, and to establish good practice that will be developed and evaluated. Meanwhile, recommendations and suggestions for the future practices for teaching SD in music lessons will be offered.

6. What are the risks of taking part?

There are no specific physical risks to taking part, additional to the everyday risks you might face when you attend the school. You will take 3 hours of your time if you choose to take part.

The psychological risks to participants are extremely low. As most studies, you may feel nervous or uncomfortable during the classroom observations and interviews. In order to keep these effects to a minimum, Yusi will spend 1-2 days per-week (a total of 2 weeks before teaching intervention) in school, getting to know you, and to give you an opportunity for you to get to know her. Each interview will start with some general discussion, and the interviews will be friendly and informal. You can withdraw for the research at any time, if you feel uncomfortable.

7. What will happen to the results? Will I taking part be kept confidential?

The results will be written into my PhD thesis and will produce conference papers/journal articles.

The comments that you make during the whole research will be made anonymous in any publication. Your personal contact details and the audio-recorded data will be kept in the researcher's computer with password protection, and the evaluation forms and teaching plans will be locked in the researcher's drawer. Photographs will probably be taken, and your images will appropriately be blurred in any publication.

8. What happens if I don't want to carry on with the study?

At any point during the study you can withdraw without having to give a reason.

9. Who is organising and funding the research?

The research is not funded. It is being organized and undertaken by Yusi Cheng from Brunel University as her PhD research project.

10. What if there is a problem or I have a complaint?

Approval has been granted by the School of Health Sciences and Social Care Research Ethics Committee. If you have a problem or complaint, you can let Yusi (contact details at the front of the leaflet), her supervisor - Prof. Susan Buckingham (email: susan.buckingham@brunel.ac.uk) or the Chair of the School Research Ethics Committee, Dr Mary Pat Sullivan (email: mary.sullivan@brunel.ac.uk) know when you take part in the research.

Appendix 10: Information leaflet for students



Exploring students' learning of sustainable development through music education: an exploratory study in Key Stage 3

Contact for this project:
Yusi Cheng
yusi.cheng@brunel.ac.uk
(0044) 7827 336126

INFORMATION LEAFLET (For students)

I would like to invite you to take part in a research project. Before you decide whether to take part, I'd like to tell you more about the research and what it would involve for you.

10 points about the research:

1. What is the study for?

- To find out how music education can promote students' understanding about the environment,
- Investigate music teachers' approaches for connecting environment and social issues with music teaching in KS3 lessons.
- Explore students' and teachers' views about using music experiences to learn care for the earth/environment.

2. Why have I been invited to take part?

- Because you are studying KS3 curriculum in music and will play a vital role in society in the future.

3. Do I have to take part?

- No. You are a volunteer, and you can step out at any time.

4. What will happen if I take part?

- The whole research will happen in your school during the school day over two months. You will be invited to talk to Yusi about your ideas about the music lessons and your views on some environmental issues, before and after 6 lessons.

5. What are the benefits of taking part?

- To develop teaching of environmental and social issues by using music.

6. What are the risks of taking part?

- It is very unlikely that there will be any risks to take part in the research. If you choose to take part, you will be involved in 2 sessions of discussions.

- You may feel nervous or uncomfortable at the beginning of the research. Yusi will spend 1-2 days per-week (a total of 2 weeks before researching) in school, so you and she can get to know each other a little. Each interview will start with a general chat, which will be friendly and positive in. If you are at all worried, you can discuss your concerns with your music teacher, and you can quit participation in the research at any time, if you feel at all uncomfortable.

7. What will happen to the results? Will my taking part be kept confidential?

- I will not talk about what you say in the classroom or interviews to anyone except my university supervisors, but these will be summarised in a general way for my PhD thesis and may produce conference papers/journal articles. Your name and the name of the school will always be anonymous.

- Photographs will probably be taken, but your images will be blurred so that you will not be able to be recognized.

8. What happens if I don't want to carry on with the study?

- At any point during the study you can withdraw without having to give a reason.

9. Who is organising and funding the research?

- The research is being organized, funded and undertaken by Yusi Cheng from Brunel University as her PhD research project.

10. What if there is a problem or I have a complaint?

- You can let either Yusi (contact details at the front of the leaflet) or your music teacher know. If you have a complaint about Yusi, you can let her supervisor - Prof. Susan Buckingham (email: susan.buckingham@brunel.ac.uk) or the Chair of the School Research Ethics Committee, Dr Mary Pat Sullivan (email: mary.sullivan@brunel.ac.uk) know.

Appendix 11: Information leaflet for parents



Exploring students' learning of sustainable development through music education: an exploratory study in Key Stage 3

Contact for this project:

Yusi Cheng

yusi.cheng@brunel.ac.uk

(0044) 7827 336126

INFORMATION LEAFLET (For parents)

I would like to invite your child to take part in a research project. Before you decide whether to take part, I'd like to tell you more about the research and what it would involve for them.

10 points about the research:

1. What is the purpose of the study?

This project aims to identify the transformative role of education towards Sustainable Development (SD), and to investigate British music teachers' teaching approaches for implementing Education for Sustainable Development (ESD) in KS3 classrooms.

2. Why has my child been invited to take part?

This research will be undertaken in three secondary schools in London. Your child have been invited to take part as your child/students are future citizen(s) who will play a vital role in a future sustainable society and now are studying KS3 curriculum in a 'sustainable school' in London. I hope to get information from young people who are currently following the KS3 music curriculum in a 'sustainable school' in London now.

3. Does my child have to take part?

No. Participation in the project is entirely voluntary. Before I begin the research, I will ask you if you would prefer your child not to take part. If you do not reply, I will assume that you have no objection, however, once the research has begun, you are free to stop your child taking part at any time without giving a reason.

4. What will happen if my child takes part?

If you agree to take part, you don't need to do anything, and your child will be invited to participate in the research, which will consist of 6 music lessons with interview before and after 6 lessons. The whole research will happen during the school day on school premises within two months. If you object to this, please fill in the form below and email to Yusi (contact details at the front of the leaflet) or contact the music teacher directly to opt your

child out of the research. At any point during the study you can withdraw your child without having to give a reason.

5. What are the benefits of taking part?

This research will work with the music teacher to develop the school's provision, and to establish good practice that can be evaluated. Meanwhile, recommendations and suggestions for future practices for teaching SD in music lessons will be developed.

6. What are the risks of taking part?

There are no physical risks to taking part, additional to the everyday risks your child might face when they attend the school. If you choose to take part, your child will be involved in 2 hours of discussions before and after the 6 lessons.

The psychological risks are extremely low. As with most studies with human beings, your child may feel nervous or uncomfortable at the beginning of the classroom observations and interviews. In order to minimise this, Yusi will spend 1-2 days per-week (a total of 2 weeks before teaching intervention) in school so that Yusi and the students can get to know each other. Each interview will start with a general chat, and Yusi will keep a friendly and positive tone in the interviews. Sensitive questions which could cause distress to your child will not be asked in interviews. You can withdraw your child from the research at any time, if your child has concerns which cannot be addressed by Yusi and the music teacher.

7. What will happen to the results? Will my child taking part be kept confidential?

The results will be written into my PhD thesis and will produce conference papers/journal articles.

The comments that your child makes during the whole research will be made anonymous in any publication. Your child's personal contact details and the audio-recorded data will be kept in the researcher's computer with password protection. Photographs will probably be taken, and the images of your child will appropriately be blurred in any publication.

8. What happens if I don't want my child to carry on with the study?

If you do not want your child to participate in this research, please fill in the form below and email to Yusi (contact details at the front of the leaflet) or contact the music teacher directly to opt your child out of the research. At any point during the study you can withdraw your child without having to give a reason.

9. Who is organising and funding the research?

The research is not funded. It is being organized and undertaken by Yusi Cheng from Brunel University as her PhD research project.

10. What if there is a problem or I have a complaint?

Approval has been granted by the School of Health Sciences and Social Care Research Ethics Committee. If you have a problem or complaint, you can let Yusi (contact details at the front of the leaflet), her supervisor - Prof. Susan Buckingham (email: susan.buckingham@brunel.ac.uk) or the Chair of the School Research Ethics Committee, Dr Mary Pat Sullivan (email: mary.sullivan@brunel.ac.uk) know when you take part in the research.

Appendix 12: Information leaflet for headteacher



Exploring students' learning of sustainable development through music education: an exploratory study in Key Stage 3

Contact for this project:

Yusi Cheng

yusi.cheng@brunel.ac.uk

(0044) 7827 336126

INFORMATION LEAFLET (For Headteacher)

I would like to invite a music teacher and one class of students in KS3 in your school to take part in a research project. Before you decide whether to take part, I'd like to tell you more about the research and what it would involve for them.

10 points about the research:

1. What is the context and purpose of the study?

There is a growing interest and recognition about the relationship between music and Sustainable Development (SD) and the positive role that music discipline plays on the Education for Sustainable Development (ESD) programme. As some music educators argue, music not only can provide a rich data source associated with SD through lyrics, but also can be a powerful educational tool to stimulate learner's enthusiasm and enable them get involved in the study of SD. Music learning has great potential for helping in creating human's awareness of and developing the ethics of SD to foster responsible behaviour. Contemporarily, an increasing number of musicians are aware of music's remarkable ability to achieve sustainability and are attempting to integrate the issues of SD into musical activities, and the United Nations Educational, Scientific and Cultural Organization (UNESCO) proposed to introduce issues of SD into music education. However, even though ESD is already present as an established part of the National Curriculum in England's schools, in secondary schools, the music subject appears more often to be ignored and excluded in the ESD curriculum. Facing up to the global threat of unsustainable development, it is time to make some efforts and changes in the current secondary music classrooms for the future.

All of the above helped generate the study topic. This project aims to

- Investigate how SD might actually be taught in secondary music classrooms in England.
- Explore how the specific ESD principles may be addressed and achieved through the medium of music classroom learning.
- Analyse music teachers and children's views on the transformative role of music education.
- Offer recommendations and suggestions for the future practices about teaching sustainability in music classrooms.

2. Why have you been invited to take part?

This research will be undertaken in three London comprehensive schools with a commitment to ESD and excellent music education. You have been invited to be one of three schools and the school's identities will be obscured.

3. Do the music teacher and students have to take part?

No. Participation in the project is entirely voluntary. Before I begin the research, I will ask you if you would like the music teacher and students in your school to take part. If you choose to participate, once the research has begun, you are free to stop them taking part at any time without giving a reason.

4. What will happen if the music teacher and students take part?

If you agree with their participation, they will be invited to participate in an ethnographical case study research, which will consist of 6 music lessons and a before and after interview. The whole research will happen during the school day on school premises in two months, and I will discuss with you how I can mostly usefully provide you with outcomes of the research.

5. What are the benefits of taking part?

This research will work with the music teacher to develop the school's provision, and to establish good practice that will be developed and evaluated. Meanwhile, recommendations and suggestions for the future practices for teaching SD in music lessons will be offered.

6. What are the risks of taking part?

There are no physical risks to taking part, additional to the everyday risks the teacher and students might face when they attend the school. They will take 3 hours of their time if you choose to take part.

The psychological risks are extremely low. As with most studies with human beings, the music teacher and students may feel nervous or uncomfortable at the beginning of the classroom observations and interviews. In order to minimise this, Yusi will spend 1-2 days per-week (a total of 2 weeks before teaching intervention) in school so that Yusi and the participants can get to know each other. Each interview will start with a general chat, and Yusi will keep a friendly and positive tone in the interviews. Sensitive questions which could cause distress to participants will not be asked in interviews. You can withdraw from the research at any time, if they have concerns which cannot be addressed by Yusi.

7. What will happen to the results? Will the music teacher and students taking part be kept confidential?

The results will be written into a PhD thesis and may produce conference papers/journal articles.

The school name and the comments that the teacher and students make during the whole research will be made anonymous in any publication. Participants' personal contact details and the audio-recorded data will be kept in the researcher's computer with password protection, and the students' works, the music teachers' evaluation forms and teaching plans will be

locked in the researcher's drawer. Photographs will probably be taken, and the images of the school, teacher and students will appropriately be blurred in any publication.

8. What happens if I don't want them to carry on with the study?

At any point during the study you can withdraw them without having to give a reason.

9. Who is organising and funding the research?

The research is unfunded. It is being organized and undertaken by Yusi Cheng from Brunel University as her PhD research project.

10. What if there is a problem or I have a complaint?

Approval has been granted by the School of Health Sciences and Social Care Research Ethics Committee. If you have a problem or complaint, you can let Yusi (contact details at the front of the leaflet), her supervisor - Prof. Susan Buckingham (email: susan.buckingham@brunel.ac.uk) or the Chair of the School Research Ethics Committee, Dr Mary Pat Sullivan (email: mary.sullivan@brunel.ac.uk) know when you take part in the research.

Appendix 13: The contextual information on each school's KS3 music learning

● School A

Table 13.1: A summary of School A's Music KS3 Curriculum

	Learning objectives	Unit	Expected Achievement
Year 7	Develop core skills in listening, performing and composing.	<ul style="list-style-type: none"> ●Making Connections; ●Impressionism; ●Gamelan ; ●Latin Beat. 	<ul style="list-style-type: none"> ●Know the basic language and elements of music; ●Develop keyboard and performance skills; ●Widen musical horizons and creativity through a wide range of composing activities; ●Develop listening skills, focus on basic musical concepts and features such as instrumentation and texture.
Year 8	Expand the skills learned in Year 7 by focusing in greater detail on musical notation and stylistic characteristics.	<ul style="list-style-type: none"> ●Scales & Chords; ●Jazz & Improvisation; ●Film Music; ●Going Solo. 	<ul style="list-style-type: none"> ●Further develop core skills in listening, performing and composing; ●Widen understanding and appreciation of music; ●Expand their musical creativity.
Year 9	Investigate how other composers have composed and arranged music.	<ul style="list-style-type: none"> ●Ground Bass; ●Pictures at an Exhibition; ●Music for Special Events; ●African Drumming. 	Develop high standards of listening, performing and composing, working as individuals, in pairs, as well as small-group and whole-class ensembles.

According to School A's prospectus, the arts curriculum plays a vital role in developing students' creative minds. The music department has two well-equipped classrooms for music making, a recording studio, a number of sizeable practice rooms for further development of musical skills and performance venues. Through the provision of music technology facilities, the music teachers offer various learning opportunities for students according to their own individual needs and aspirations. Different learning objectives and content are planned to be achieved through a series of units for Key Stage 3 (see Table

13.1), and the development of students' musical skills in listening, performing and composing run through the three years of music study. A number of opportunities are provided by the music department for students to extend their learning by visiting theaters and concerts, and attending extra-curricular musical clubs and ensembles. In order to enable students to develop fully their own areas of interest and explore their own talents, this school employs a team of professional musicians who offer specialist instrumental lessons on a weekly basis, and the students are encouraged to perform in regular musical events, such as instrumental recitals, concerts, showcase evenings and the School Production.

● **School B**

Although School B specialises in sports, various opportunities for promoting students' music learning are offered, inside and outside the classrooms. There are two well-equipped classrooms with several kinds of instruments and a recording room in the music department. As the school does not have particular rooms for the practice of music skills, students practice in music classrooms or the recording room. In terms of the music curriculum for Key Stage 3, different subjects are designed according to each year group students' interests and music learning capability (see Table 13.2). Extra-curricular clubs and activities are organised by the music department to help students gain greater enjoyment, appreciation and understanding of music and acquire music and performance skills. There is a Creative Arts programme, composed of Music, Drama and Art which is responsible for producing school arts events, such as 'Back to the 80s' in 2013.

Table 13.2: A summary of School B's Music KS3 Curriculum

	Term	Subject
Year 7	Autumn	Music from other cultures
	Spring	The world of music
	Summer	London
Year 8	Autumn 1	The musical performer
	Autumn 2	The Blues Versus Reggae
	Spring	Band Studies
	Summer 1	Dance, Hip Hop and Beyond
	Summer 2	The musical composer

● **School C**

In School C, four different topics are studied in Years 7 and 8's music classrooms (see Table 13.3). A wide range of musical styles, cultures and skills are introduced to students through the integration of composing, listening and performing, which are seen as three

essential skills (QCA, 2007). Learning on each topic is assessed according to the level descriptors of National Curriculum and is distributed between teacher, peer and self assessment. Moreover, the school's homework policy stipulates that an extended homework project should be completed by the students in the Spring term.

Table 13.3: The topics that Music Schemes of Works follow for School C's KS3 students

	'Foundation' Stage (Key Stage 3)	
	Year 7	Year 8
Topics	The elements of music	The haunted house
	Cartoon music	Calypso music
	The instruments of the orchestra	James band
	An ensemble performance	An ensemble performance

The school has a tradition of music making in the formal curriculum as well as outside of the music classrooms. During the 'Foundation' stage, students are encouraged to learn to play a number of instruments, such as keyboards and guitar. Within the school day, each student is offered opportunities to attend vocal and instrumental tuition as well as music theory lesson, which are taught by music teachers or other qualified peripatetic teachers. Some students take graded music examinations each year. Various opportunities are offered for students to showcase their talent and work, such as the concerts in each term, annual stage productions and assemblies at the summer fair.

● **School D**

In School D, as the music teachers described, their main focus in lessons is the development of students' practical skills of music, which has been demonstrated by observations in their normal lessons. The music department was renovated in 2012 to enable students in all year groups to play either solo or in bands in each lesson. Moreover, good facilities are also provided by the department for the support of students' playing in different styles, such as jazz, blues, hip-hop and pop music, as well as their own original music, both in and out of classrooms. Table 13.4 provides a summary of the planning of the music curriculum for Key Stage 3, which consists of the practical tasks for each year group, the different topics for each term and the elements of music which are planned for each topic. The music teacher in School D does not write a Scheme of Works for each topic or each lesson or booklets for students, but the learning objectives, teaching content, resources and the content of assessment are shown to all students via power point in each lesson. This department also offers extra-curricular activities and performance events for students, which is included in the 'W Factor' programme.

Table 13.4: Planning of KS3 Music Curriculum in School D

	Year 7 (Keyboard, Voice, Percussion, 'Noteflight')	Year 8 (Guitar, Bass, Drums, Keyboard, Voice, 'Numu')	Year 9 (Guitar, Bass, Drums, Keyboard, Voice, 'Protools')
Autumn 1	<u>Learning Music</u> (Melody, Chords, Timing, Structure)	<u>World Music</u> (Drones, Pitch, Timing)	<u>The Blues</u> (Rhythm, Chords, Tempo)
Autumn 2	<u>Ingredients of Music</u> (Melody, Chords, Timing, Structure)	<u>Western Classical</u> (Melody, Chords, Timbre)	<u>R&B</u> (Rhythm, Chords, Tempo, Texture)
Spring 1	<u>Composing</u> (Rhythm, Structure, Timing)	<u>Caribbean Music</u> (Rhythm, Chords, Timbre, Duration)	<u>Dance Music</u> (Rhythm, Chords, Pitch, Texture)
Spring 2	<u>Drumming</u> (Rhythm, Pulse, Variation, Timing)	<u>Jazz</u> (Timing, Pulse, Variation)	<u>Pop Music</u> (Chords, Duration, Tempo, Texture, Structure)
Summer 1	<u>Keyboards and Guitar</u> (Chords, Structure, Timing)	<u>Folk</u> (Timing, Pulse, Variation)	<u>Creation and Improvisation</u> (Final assessment) (Rhythm, Chords, Timbre, Duration, Pitch, Tempo, Texture, Structure)
Summer 2	<u>Learning how the stations work</u> (Chords, Timing)	<u>In at the Deep End</u> (Final assessment) (Structure)	

Appendix 14: Each school's integrated approach of SD through activities

● School A

School A has a long tradition of providing a range of enrichment clubs and activities, including some activities about SD. The school has registered for 'Green Schools Revolution', which is one of the sustainability education programmes in the UK. All teachers and students are encouraged to take part in the 'eco-office' and 'recycling' activities in the school, and a green box, which is used to collect wastepaper, is put in the corner of each classroom and office. Every morning, a group of students is responsible for waste management and recycling under the guidance of one teacher. In the last two years, some students from one year group were invited by a company to make instruments, costumes and masks with recyclable products. Moreover, the school also encourages students to cycle to school and recommends some externally run cycling lessons to support this. There is a bicycle parking area in the school, but only around 2 percentage of the total number of students and staff at the school cycle to school. School 'A' has accreditation as a 'Healthy School'. Tutors in each class discuss healthy lifestyles with students and remind them to improve their own lifestyles regularly during the Registration period. A Health Fair has been held in the school to which some outside speakers were invited. The Ofsted inspector reported that students had an understanding of healthy lifestyle and 'showed a heightened awareness of wider health-related issues' (Ofsted, 2011 p.6). The school encourages students to eat healthily, but it was discovered through observations in school's canteens and informal conversations with individual students that some students, especially girls, actually do not have lunch or only eat some cookies for keep slim. Throughout the year there are some visits and trips for students. For example, Year 9 students visited the National History Museum to study earthquakes and volcanoes, Year 7 students visited the London Docklands to find out the effects of change in cities, and also visited the East End of London to investigate the urban regeneration for SD. In addition to these, the school has several links with local community action groups, such as the Stop Smoking Service in the local borough.

● School B

Different SD-related activities were offered to different year groups in School B in 2012/2013. In Year 7's 'Additional Learning Day', the geography department held a 'Go Green Day' and another day for recycling. On the 'Go Green Day', students spent a whole day on environmental issues, investigating their carbon footprint, discussing its consequences and envisioning a green future, the results of which were pasted on the wall next to Year 7's classrooms (see Figure 14.1). Year 7 students took part in a recycling day in 2012 which investigated why people recycle, how different countries

import waste and how to be greener and more sustainable. In the summer term 2012, a company provided an opportunity for 40 Year 8 students to connect to the natural world by living outdoors with 5 teachers and the experts in living outdoors from the company for 3 nights and 4 days. During these days, they learnt survival and problem solving skills (see Figure 14.1). In order to teach older students about the protection of the environment, a rubbish pick-up day is offered to them every year when they go out to the local area and collect the rubbish and do some weeding and digging. Moreover, School B, as a 'Healthy School', cooperates with 'Food for Life Partnership' to provide children with food as healthy as possible. In addition to this, each person is encouraged to recycle by classrooms having recycling facilities. However, as one teacher pointed out during informal conversations, not all students recycle, and whether the class of students does recycling works depends on the teacher.

Figure 14.1: The pictures of selected SD-related activities in School B



● School C

Even though School C has not applied for any SD-related awards, a lot of opportunities are provided by the school to stimulate students' engagement in sustainable development. An 'Eco-project' was carried out in 2012 in which students from Year 8 generated ideas for creating a more Eco-Friendly school, and one of the recurring topics was to 'recycle more'. Teachers and students in the school presently only recycle paper in recycling boxes which are collected each day. The 'Eco-club' activity in the spring term 2013 tied in with the idea of 'recycle more' by collecting clothes, shoes and books from students in different year groups and sending them to an orphanage in Ghana. The teacher in the 'Eco-club' described this activity as 'an excellent way of recycling'. There were 7 students in the club, and one boy, who wore a badge of 'Eco-club' every time I saw him, came from the sample class. The picture in the bottom right corner of Figure 4.5 illustrates the process of sorting clothes at the eco-club's activity room.

Compared with Schools A and B, school gardening is a distinguishing feature of School C. The school has a beautiful campus with different kinds of lawns and different types of trees. Plants are grown inside and outside the classroom, and the importance of plants in people's lives is instilled into the students. There is a garden next to the classroom building, and a 'Gardening Club' runs from September to November and March to July once a week. In the garden, students are able to learn to grow lettuce, spinach, kale, beans, beetroot, radishes and some flowers under the guidance of two teachers. When the vegetables become mature, they would be put in the staff room for sharing, with no chance for students to eat them. However, very few students engaged in the gardening works during the period of research, which disappointed the two teachers. The selective gardening works, which were completed by students and teachers together, are showed in Figure 14.2.

Apart from the 'Eco-project', 'Eco-club' and 'Gardening Club', the students in School C are also encouraged to be involved in 'Model United Nations' events, healthy eating events and field visits. At a simulated United Nations conference, students act as specific countries' delegates or representatives to propose solutions, and work together to develop resolutions which aim to tackle real world issues and problems at hand. As with other sample schools, School C also play a part in improving young people's health by encouraging them to eat well. The school prepares healthy food and drinks according to the government's nutrition guidelines, and ensures dissemination and provision of training in healthy eating and lifestyle for all students. There are two dining halls and a fruit bar, so the students have easy access to hot and cold meals at breaks and

lunchtimes. The geography department offers a variety of activities on Excel Days, such as public speaking, visiting local museums.

Figure 14.2: School gardening and Eco-club's recycling activity in School C



● School D

In school D, students and staff are reminded to make contribution towards sustainable development anywhere they can. For example, there is a large TV screen in the reception, which plays educational videos on the schoolround-the-clock, as well as on healthy lifestyles. When people walk around the school, they could find recycling boxes in each room and various posters advertising recycling, keeping the environment tidy, taking care of the planet and eliminating prejudices. All students and staff in School D have opportunities to receive guidance for making healthy food choices from the publicity boards at the canteen. As a 'Healthy Travel School', a map for cycling to School D is pasted next to the gate of the school, and a training project and a bike club are organised to develop students' cycling skills and ensure they ride safely.

A wide range of activities operated in connection with SD. School D has a 'Conservation Area' which is close to the basketball court and looks like a big school garden with a gravel road, a bush, a small pond, plants, flowers and two chickens. This attracts butterflies and bees and gives students access to the natural environment. A

'Conservation Area Regeneration' project runs through school's 'Wfactor'. From 2012 to 2013, students from across the school help to dig, clear and replant the garden so as to encourage new wildlife to take up residence in the area (see Figure 14.3). During the summer term in 2012, 15 students, as conservation volunteers, took part in the 'Sow Good Garden Project' to improve the local area. They transformed the front garden of a badminton centre from a rubbish filled weed patch into a welcoming community garden for local residents. Moreover, students in School D not only recycle paper in classrooms, some of them also made jewellery with broken and unused wooden, glass, plastic and crystal items, to sell for charity and for themselves. A relationship between School D and a farm was established in 2013, which provided opportunities for a number of KS3 students to get experience on how to look after and care for animals (see Figure 14.3). In addition to above activities, a Youth Conference and the charity works, such as raising money and providing emergency food for people in crisis, are carried out periodically in the school. Several wind turbines are installed by the local council on the school's playground (see Figure 14.3), which help students better understand the nature of wind-based energy, how it works and its implications for the future of power generation.

Figure 14.3: Selected SD-related activities in School D



Appendix 15: The learning objectives and classroom activities in each school

Note:

1. Activities for SD learning: **BLUE**;
2. Activities for music learning: **YELLOW**;
3. Integrative activities for music and SD learning: **PINK**.

● School A

	Learning Objectives (SD)	Learning Objectives (Music)	Main Classroom Activities (listed in order)
Lesson 1	<ul style="list-style-type: none"> ● Develop an understanding of what is happening to the world and the meaning of sustainable development (SD). ● Raise awareness of the importance of looking after our world. 	Rehearse and perform the 'Together We Can' rap using appropriate performance techniques and stylistic characteristics.	<ol style="list-style-type: none"> 1. Looked at the pictures on unsustainability. 2. Discussed the issues of unsustainability. 3. Watched a cartoon video on SD. 4. Discussed the concept of SD. 5. Students learned, rehearsed, performed and recorded the rap. 6. Plenary: recapped the meaning of SD and the things we can do to help.
Lesson 2	<ul style="list-style-type: none"> ● Encourage students to contribute to the future of the world. 		<ol style="list-style-type: none"> 1. Watched a short musical film on SD. 2. Discussed the issues of SD in the film and students' consumption habits. 3. Teacher introduced the links between rap and the issues of SD. 4. Rehearsed the rap in groups. 5. Plenary: performed, evaluated and recorded the raps in groups.
Lesson 3		<ul style="list-style-type: none"> ● Create and arrange suitable lyrics for a rap called 'Protect Our World' to promote the basic principles of sustainable development. 	<ol style="list-style-type: none"> 1. Watched a song video – 'Reduce, Reuse, Recycle'. 2. Discussed, explained and demonstrated how to create a rap. 3. Students brainstormed and wrote their own lyrics in pairs.
Lesson 4		<ul style="list-style-type: none"> ● Use the knowledge of popular music to create a simple backing track for the rap. 	<ol style="list-style-type: none"> 1. Watched a video about a student's performance of BeatBox. 2. Discussed it and 'black music'. 3. Teacher explained and demonstrated how to create an instrumental backing track. 4. Students continued to write lyrics and learned to compose a simple backing

		<ul style="list-style-type: none"> ● Rehearse, perform and record the piece in preparation for assessment. 	<p>track in pairs or groups.</p> <p>5. Plenary: Students performed their raps and peer-evaluated.</p>
Lesson 5			<p>1. Listened to a rap and discussed it.</p> <p>2. Looked at and discussed a figure on three pillars of SD.</p> <p>3. Watched and discussed a video as examples of students' performance of their own raps on 'recycle'.</p> <p>4. Students prepared the chorus of their raps with teacher's backing track in pairs or groups.</p> <p>5. Plenary: performed, recorded and evaluated the raps.</p>
Lesson 6			<p>1. Teacher demonstrated how to create a basic riff for a rap.</p> <p>2. Students composed and rehearsed their own raps in groups.</p> <p>3. Plenary: performed, evaluated and recorded the raps.</p>
Lesson 7			<p>1. Discussed problems in our world.</p> <p>2. Completed an evaluation sheet.</p> <p>3. Watched, sang and discussed the song – 'Reduce, Reuse, Recycle'.</p>

● **School B**

	Key Question (SD)	Key Question (Music)	Main Learning Activities (listed in order)
Lesson 1	Do I know what Sustainable Development means?	Can I put notes together to create a melody?	<p>1. Introduced the meaning of SD.</p> <p>2. Looked at pictures (see Figure 5.1) and brainstormed the question in pairs – <i>'What are the things happening today that mean people in the future might not be able to enjoy the places in the photos?'</i></p> <p>3. Students answered and discussed the question with teacher.</p> <p>4. Teacher explained the reasons for SD learning.</p> <p>5. Students discussed and wrote down the definition of SD in pairs.</p> <p>6. Introduced composition task – 'Before Man' and musical features, and demonstrated it.</p> <p>7. Students composed alone or in pairs</p>

			based upon a picture stimulus. 8. Students performed and got feedback.
Lesson 2	Do I understand the link between our behaviour and our impact on the earth?	Can I use an ostinato, a drone and 2 different scales in a composition?	1. Discussed and listed the things that people were doing to change how they use or conserve the resources that they have with partner and the teacher. 2. Recapped the SD meaning in pairs. 3. Relearned and completed the first section of their composition. 4. Introduced the second picture and the rest of composition task – ‘After Man’. 5. Students composed alone or in pairs. 6. Students performed and got feedback. 7. Recalled the meaning of SD.
Lesson 3	Do I understand what the terms ‘global warming’ and ‘ecological footprint’ mean?	Have I completed my composition?	1. Looked at two pictures on a sheet and answered questions in pairs. 2. Discussed the meaning of two terms – ‘Global Warming’ and ‘Ecological Footprint’ with partner. 3. Recapped composition guidelines and continued to compose. 4. Performed and evaluated students’ composition works.
Lesson 4	Do I understand the effect that humans have had on the rainforest?	<ul style="list-style-type: none"> Do I understand the guidelines for my second composition? Have I created a melody for the my second composition? Can I use the MAC to record something? 	1. Looked at rainforest pictures (see Figure 5.2) and completed questions with partner. 2. Introduced and demonstrated a demo Logic Express on the Mac. 3. Introduced the second composition task. 4. Students created and recorded a melody as part A onto the computer.
Lesson 5	Do I understand what SD means?	<ul style="list-style-type: none"> Have I created an A section for my Ternary piece, using the correct musical features? Can I explain what Ternary means? 	1. Completed a quiz sheet on SD. 2. Teacher explained the link between music and SD. 3. Introduced the idea of different parts of a song, and explained Ternary form. 4. Students created and recorded a melody as part B alone or in pairs. 5. Introduced two pictures and reminded students the different themes in two parts/sections. 6. Students continued to compose.
Lesson 6	Can I describe what sustainable	Have I created a ternary composition,	1. Card sorting task: matched the phrases or words with definitions.

	development means?	featuring an A and a contrasting B section?	<ol style="list-style-type: none"> 2. Introduced assessment criteria. 3. Teacher demonstrated the second composition task on the computer. 4. Students practised and completed their works alone or in pairs. 5. Students performed and got feedback.
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● School C

Title and Aims of Unit: Songs to save the Earth		
<ul style="list-style-type: none"> - To develop pupils' understanding of sustainable living - To listen to a range of songs about sustainable living - To write a song or rap about sustainable living and to perform it to the class - To learn about how tonality and the elements of music can be used to create a mood (to match the topic of the song) 		
	Area of work and Objectives	Main Learning Activities (listed in order)
Lesson 1	<p>What is sustainable living?</p> <ul style="list-style-type: none"> - To develop pupils' understanding of 'sustainable living' 	<ol style="list-style-type: none"> 1. Introduced the learning objective and success criteria. 2. Watched a song video – 'Heal the world'. 3. Discussed 'what's the song about?'. 4. Watched a video – 'What is Sustainable Living?'. 5. Described the meaning of Sustainability in one sentence, discussed it and wrote down the definition showed on PPT. 6. Brainstormed in pairs 'What we are doing now which is unsustainable?', and then shared answers to the class. 7. Introduced the task – writing a song/rap about SD. 8. Teacher explained 'verses' and 'chorus', and gave examples on how to work. 9. Students chose topics and wrote lyrics in pairs. 10. Plenary: Exit Ticket – each student wrote 'one thing they could do to live a more sustainable life' on a post-it note and stuck it on the whiteboard.
Lesson 2	<p>Creating a mood</p> <ul style="list-style-type: none"> -To understand how tonality can be linked to mood 	<ol style="list-style-type: none"> 1. Introduced learning objective and success criteria. 2. Watched a song video – 'Renewed Energy Song'. 3. Answered questions about the song on a sheet, and then discussed the answers. 4. Teacher played 3 short musical ideas, and students wrote down words to describe the mood. 5. Teacher explained what is 'tonality' and how is it linked to the mood. 6. Teacher explained 'chord patterns' and give students a range of chord patterns to choose. 7. Students chose chord patterns based on the mood the progression creates to match with their topic and lyrics, and learned to play them on the keyboards in pairs.

Lesson 3	Composing a melody -To learn how to write a melody	<ol style="list-style-type: none"> 1. Students continued to practise chord patterns. 2. Teacher explained the links between chord patterns and mood. 3. Introduced the learning objective and success criteria. 4. Teacher explained how to write a melody. 5. Students composed a melody for their lyrics in pairs. 6. Plenary: chose students to perform to the class and gave feedback.
Lesson 4	Adding expression to your song -To learn how the elements of music can be used expressively to add interest to your song	<ol style="list-style-type: none"> 1. Q&A: one element of music. 2. Watched a song video – ‘Unsustainable’. 3. Answered questions about music elements in the song on a sheet, and then discussed the answers. 4. Watched a video – ‘Unsustainable’ (band performance). 5. Discussed the topics involved in the song, and recapped the meaning of ‘Unsustainability’. 6. Teacher introduced the composition task and modeled to the students. 7. Students practised on the keyboards in pairs.
Lesson 5	Fine tuning your song -To improve your songs based on targets derived from self-assessment	<ol style="list-style-type: none"> 1. Set targets to achieve during this lesson before the assessment next lesson. 2. Students improved their songs on the keyboards in pairs.
Lesson 6	Assessment Lesson -To perform your song to the class.	<ol style="list-style-type: none"> 1. Students warmed up on the keyboards. 2. Assessment: students performed their songs/raps to the teacher by turns.

● **School D**

	Learning Objectives	Main Learning Activities (listed in order)
Lesson 1	<ul style="list-style-type: none"> - To develop students’ understanding of ‘Sustainable Development’. - To learn about environmental issues and how they are caused. - To make and create instruments using recycled materials you have sourced. 	<ol style="list-style-type: none"> 1. Chosen students did rhythm practice. 2. Discussed the meaning of SD and its three parts. 3. Watched a video about SD. 4. Further discussed what SD is. 5. Chosen students read a written description of SD on PPT. 6. Discussed: 1) What can be recycled? 2) How can we contribute to SD? 7. Discussed how to create musical instrument by recycling. 8. Introduced what you will learn in the unit. 9. Recapped: 1) ‘What is SD?’ 2) ‘How can you contribute to SD?’ 3) ‘What type of instruments can you make using recycled materials?’

<p style="text-align: center;">Lesson 2</p>	<p>- To practise and create a Junk Band Performance.</p>	<p>10. Plenary: Chosen students did rhythm practice.</p> <ol style="list-style-type: none"> 1. Chosen students did rhythm practice by using recycled materials. 2. Recapped: 1) 'What is SD?' 2) 'How can you contribute to SD?' 3) 'What type of instruments can you make using recycled materials?' 3. Chosen students read the first page of further written information about SD showed on PPT. 4. Teacher explained SD and 'renewable energy'. 5. Chosen students read the second page of further written information about SD showed on PPT. 6. Teacher asked and explained 'economic problem' and 'social development'. 7. Chosen students read the third page of further written information about SD showed on PPT. 8. Teacher explained the difficult phrases on that page. 9. Q&A: the reason for recycling. 10. Watched a cartoon video on what SD is. 11. Watched a video about junk bands. 12. Introduced the learning task. 13. Watched a video on how to use junk to make music. 14. Worked in groups to make their own junk instruments. 15. Recapped: 1) the meaning of SD 2) 'What are renewable sources of materials?' 16. Plenary: Chosen one student did rhythm practice by using junk musical instrument.
	<p style="text-align: center;">Lesson 3</p>	
<p style="text-align: center;">Lesson</p>		<ol style="list-style-type: none"> 1. Reviewed the learning content in Lesson 3.

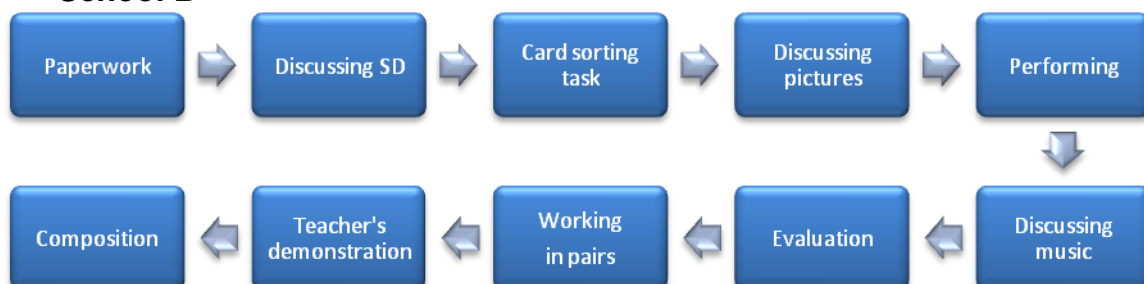
4		<ol style="list-style-type: none"> 2. Chosen students did rhythm practice by using junk musical instruments. 3. Chosen students read written information about the effects of air pollution showed on PPT. 4. Discussed 'why cause air pollution?' 5. Watched a video on air pollution. 6. Chosen students read written information about acid rain showed on PPT. 7. Teacher further explained acid rain. 8. Watched a video on the hazard of air pollution. 9. Discussed: 1) Who contribute to air pollution? 2) How to reduce air pollution? 10. Introduced and demonstrated the learning task. 11. Practised with junk instruments, one sentence and different elements of music in groups. 12. Plenary: Each group performed and was evaluated.
Lesson 5		<ol style="list-style-type: none"> 1. A girl showed her instrument to the class, described the process of making and demonstrated how to make sound. 2. Discussed and demonstrated the differences in the types of sound that different instruments made. 3. Introduced the learning task. 4. Recapped the meaning of SD. 5. Used the different elements of music to practise a junk band performance in groups. 6. Chosen one group performed and was given feedback. 7. Continued to practise in groups. 8. Plenary: Each group performed and was evaluated.
Lesson 6		<ol style="list-style-type: none"> 1. Recapped: 1) the meaning of SD 2) what can be recycled? 3) How do you feel about recycling? 2. Continued to practise the junk band performance. 3. Rhythm practice: teacher beat a drum, and students played junk instruments to follow. 4. Teacher concluded students' learning in the unit.

Appendix 16: The level of students' enjoyment of activities in each school (data obtained from students' post-teaching questionnaires)

● School A



● School B



● School C



● School D



Appendix 17: The selected students' lyrics (Schools A and C)

Nature Style (parody) – <i>by School A's students</i>	
Intro	Oppa nature style, Nature style.
Verse1	Save our planet, And learn to re-use and recycle, We've got to help the charities and Save all the habitats. We've got to choose the path to take, And change the world immersly. You know: Help, Save, All the creatures.
Verse 2	No more poaching, yeah! And factories with lots of smoke. Save the world, yeah! ×2 Let's go sing that round again. ×2
Verse 3	No pollution, Thick ozone layer, Less shops, And sprays. Less waste, Toxic dumps. We have to help the world go... Round round round round...
Chorus	Oppa nature style, ×2 Nature style. Op op op op op oppa nature style, Nature style. Op op op op op
The 1st Bridge	Hey! Endangered Rhino, Op ×5
Verse 4	Help our planet, And walk instead of the old car, We have to deveop this place, To be eco-friendly. We have to help our trees and plants to make the world greener. You know: less of those, big factories
Verse 2 used ×2. Verse 3 used and to finish off chorus.	
The 2nd bridge	Hey! Hot weather. Op, op, op, op, op, oppa nature style. Hey! Cold weather. Op, op, op, op, op We've got to save our planet. ×8
The 3rd bridge	Hey! Re-use, recycle. Op, op, op, op, op, oppa nature style.

	Hey! Landfill sights. Op, op, op, op, op.
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Reduce, Reuse, Recycle! <i>- by School A's students</i>	
Verse 1	Save water, save food. Be a good man, not a fool. Doesn't matter if you are a boy or a girl, Stick together, we can make it work.
Verse 2	Plastic, garden waste, cardboard, cans, Recycle them as much as you can. Maybe you don't know, maybe you don't care. But we know this is the best for us all.
Chorus	Yeah, listen up now, we are the ones, Who decide whether we survive. But only if we work together that We can keep this world alive.
Verse 3	Reusing things will help the land. If you wanna be green, better start now. It won't be easy, it won't be hard. But stick together, to do this right.

Save the World <i>- by School A's students</i>	
Verse 1	Hey, everybody listen to my song. Everything in this world is going wrong. Everyone is dumping rubbish out. Everyone is driving their cars around.
Verse 2	Hey, everyone stop throwing rubbish. I'm very sure there is a dust bin out. Please stop driving your cars around. I'm sure you can get there on your feet.
Chorus	Stop driving, stop dumping, just walk. Let's do it now, goanna do it tonight. Let's listen to the world and make it new. Now, it's time for saving the world.

GO GREEN <i>- by School C's students</i>	
<p>Can't you feel a change in the environment? And it's something you'll have to confront to live with. The fact that it's getting hotter every summer is something not good. To do something about it doesn't require judgement. We don't have to go out for a manhunt. All we have to do is GO GREEN.</p>	

GO GREEN, GO GREEN.
 That's all we have do.
 Join in if you want to sing it.
 Recycle, reduce, reuse.
 That's all, no one argues.
 The gift we have we misuse.
 This can cause so many future problems.
 It's your choice...you choose,
 Then we would have to choose.
 A green stabilized world, or no igloos.
 All we have to do is GO GREEN.
 GO GREEN, GO GREEN.

Unsustainability

– by School C's students

The earth is getting ruined.
 Things are running out.
 People are wasting.
 Our precious preservations.

Cars make pollution.
 Always recycle.
 Waste of energy.
 Fossil fuels are wasting now and then.

Killing animals continuously.
 Chopping trees, wasting paper.
 Chopping trees, leaves no people.
 So Reduce, Reuse & Recycle.

The River

– by School C's students

The air is polluting.
 The river is flowing.
 The air is condensing.
 The river is living.

Help save the Earth by making a change.
 We need to make it to be a better place.

The fishes are unhealthy.
 The environment is terrible.
 The fishes have motherly love.
 You need to make the difference.