Multimodal pedagogies and music students’ audio meaning-making

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I am the author of the thesis entitled **Multimodal pedagogies and music students' audio meaning-making**

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Abstract

Contemporary students have new and evolving needs and approaches to meaning-making, requiring teachers to adopt innovative pedagogies and adapt to new technological developments within and across disciplinary areas. In the case of music education, students no longer need to be proficient on an instrument to create music, with technologies such as music sequencing allowing easy access points into music composition. Multimodality, communication across a range of semiotic modes, offers pedagogical opportunities for both teachers and students to make meaning within disciplines. While the interplay of linguistic and visual modes of meaning in pedagogical contexts has been extensively studied, research into the role and value of the audio mode within multimodal constructs has received less attention. Acknowledging the rich potential music education holds for developing an understanding of the role of the audio mode in multimodal representation, this thesis explores how technology-infused, multimodal pedagogies in music education enable students’ meaning-making capacities.

Drawing on social semiotics inspired multimodality and through exploration of contemporary pedagogical affordances, this study utilises qualitative case study research methodology to explore a teacher-researcher’s pedagogical design within a secondary school Music elective. Music students’ responses to the pedagogical design are analysed, with particular focus on pedagogies for enhancing students’ audio meaning-making, including metalanguage to describe the audio mode.
The findings reveal that incorporating modes beyond the audio into the music classroom positions both the teacher and students differently, highlighting the impacts of changes to teaching approaches and how these facilitate expanded learning experiences. Pedagogical processes of differentiation coupled with scaffolding, explicit instruction and co-creation, significantly enhanced student metalanguage, understanding of musical concepts and culminated in the creation of personal compositions. The analysis reveals the changing role of a teacher from one who gives scaffolded examples to one who responds at the point of need, through improvisation and co-creation. Furthermore, the multimodal approach recognises that music is not composed in isolation of its context, but rather is influenced by various personal and contextual factors which come into play throughout the recursive processes of creation.

Music education offers an array of opportunities to harness current technologies and multimodality and move beyond a focus on the traditional skills of listening, composing and performing. Multimodal pedagogies provide opportunities for students to represent highly personal and enriching knowledges through the orchestration of the audio mode in conjunction with the linguistic and visual. This thesis reveals the value of research into music education for gaining insights into multiliteracies. This examination of multimodal pedagogies revealed development of student competencies in composition, metalanguage and technological capacities through exploration of the affordances of the audio mode in and outside the music classroom.
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1. Introduction

This chapter introduces the study, explains the rationale and provides an overview of the thesis. The chapter commences by exploring the context within which this study was undertaken. It examines the needs of contemporary learners and the shift towards multimodal texts in the 21st century. It identifies the catalysts for this change and the access points provided through the use of technology and then introduces the research, situating the study within the field of multimodality research. Following this, the potential of music education to teach the skills of the audio mode within multimodal contexts is introduced. The research problem is outlined using the curriculum documents to foreground areas of opportunity. Having identified the research problem, the research questions are presented. The methodology of the qualitative case study is introduced as is the site of the case study. The teacher-researcher’s background, talents and interests are explained. After identifying the context, aims and objectives of the study, the chapter concludes by presenting an outline of the thesis.

1.1 Context of the case study

In the digital age, the needs of contemporary learners have evolved from the acquisition of knowledge to the application of knowledge to solve problems through critical thinking, collaboration, and creativity (Luna Scott 2015; P21 2014; Prensky 2010; Ravenscroft 2012; Richardson & Mishra 2018). The digital age, characterised by the accessibility of the Internet and continued technological advancements, has reshaped the communication landscape which has fundamentally shifted the way in which students learn (Cope & Kalantzis 2017; Gee 2018). The shift in learning draws upon practices which come from beyond the classroom and are often found in informal settings (Bagdy et al. 2018; Gee 2004). In informal settings, learning occurs on a needs
and interest basis as participants work towards gathering the knowledge and skills to be able to complete particular tasks that are relevant to them (Greenhow & Lewin 2016). There is a need for learners to be creative and flexible in their approach to tasks as more broadly schools are emulating workplace environments (Gee 2018; Livingstone & Sefton-Green 2016).

The shift in the learning landscape due to technological advancements and increase in digital literacies, has changed the way in which meaning is communicated (Kress 2010). Literacy today encompasses a much broader meaning than in previous times (Böck & Pachler 2013). Communication practices have extended beyond reading, writing, listening and speaking and now encompass an appreciation of the visual, audio and digital (Cope & Kalantzis 2015; Jewitt 2013; Smith 2018a). As new technologies have allowed access to texts that utilise multiple modes in everyday communications, multimodality has come to the fore in the learning landscape (Cazden et al. 1996; Jewitt & Kress 2003; Kress 2010; Kress & van Leeuwen 2006; The New London Group 2000). Multimodality, the communication through a combination of modes of meaning, offers a rich variety of avenues for both the creation and interpretation of meaning in an array of texts (Cope & Kalantzis 2009a). It stems from the combination of different modes – linguistic, audio, visual, spatial, gestural and multimodal (Iyer 2007; The New London Group 2000). The prevalence of multimodality has increased the number of possibilities for sophisticated meanings with combinations of modes and changed the importance of the once dominant written text (Cope & Kalantzis 2017; Jewitt 2013; Kress 2010).

Text-related learning in the contemporary classroom setting is continuously evolving and requires teachers to garner new and innovative pedagogical practices that engage
students and retain relevance when exploring multimodal texts. Initially, research into multimodality focused on the interplay between the linguistic and visual modes (Cloonan 2011; Kress & van Leeuwen 2006), however, a growing awareness of the value of the audio mode has resulted in numerous studies being undertaken in recent years such as the following (Barton & Unsworth 2014; Breeze 2011; Burn & Richards 2016; Cercone 2013; Gall & Breeze 2005; Griffith & Machin 2014; Harrop-Allin 2017; Weekes 2016; West 2009).

Music education holds a rich potential for the development of significant understandings pertaining to the role of the audio mode within multimodal meaning-making. This thesis contributes to the growing area of research about the audio mode within multimodal pedagogical research. It explores teaching and learning practices which harness and emphasise the power of the audio mode while also considering and examining the interrelationship between other modes in meaning-making and composition.

1.2 The Research Problem

Music educators possess specialised capacities in examining, describing and composing in the audio mode. Music educators also possess a unique language and terminology to describe the audio mode and its interrelationship with other modes of meaning. Music education in schools has predominantly operated using a monomodal focus on the audio component. The music education discipline has the potential to utilise other modes in conjunction with the audio mode and promote the teaching of multimodal texts.
However, in New South Wales secondary education, as in many parts of the world, each discipline is usually taught individually despite requirements within the Music Syllabus Years 7-10 to incorporate cross-curriculum content into the courses (Board of Studies 2003, p.20). The Music Syllabus Years 7-10 provides no specific links to other subject areas but rather leaves opportunity for teacher interpretation and the inclusion of content in the following areas; Aboriginal and Indigenous, Civics and Citizenship, Environment, Gender, Key Competencies, Literacy, Multicultural, and Numeracy (Board of Studies 2003, pp. 20-21). The Australian Curriculum for the Arts: Music acknowledges the necessity for cross curriculum priorities and general capabilities by endorsing the following areas: Literacy, Numeracy, Information and Communication Technology (ICT) Capability, Critical and Creative Thinking, Personal and Social Capability, Ethical Understanding, Intercultural Understanding, Aboriginal and Torres Strait Islander Histories and Cultures, Asia and Australia’s Engagement with Asia, and Sustainability (ACARA 2018d). However, it does not reference multimodality in any form throughout the document. Interestingly, the Australian Curriculum for English has the same cross curriculum priorities and general capabilities but also mandates the use of multimodal texts for analysis and creation throughout the stage levels (ACARA 2018a). The Australian Curriculum for Media Arts makes some references to multimodality, through the links between imagery, text and sound within technological platforms but does not use the term multimodal to explain the connections between each mode (ACARA 2018c). Considering that Music educators possess significant knowledge of the audio mode, it is surprising that Music is not considered an area that could be used to educate about the audio mode within multimodality. Whilst there is evidence that multimodality has become a priority within some areas of the Australian Curriculum, little has been done to connect subject areas with significant skillsets to contribute to this field of teaching and learning. The
exclusion of multimodal texts within the music curriculum continues to position music as a monomodal subject area and teachers of music, as sidelined overlooking their capacity to provide value in teaching related to multimodal texts.

Specifically, in Music Education, the evolution in technology has meant that the creation of music no longer requires proficiency in an instrument, as musicians and students can use digital methods and various software to engage in composition and performance (Breeze 2011; Crawford 2009; Crow 2006; Ward 2009). This has changed the landscape for Music educators, as this means a more diverse range of students can partake in the Music elective. Embracing technology and the interrelationship between the audio and other modes means that music education could have a greater relevance to students, reflecting students valuing of and engagement with multimodal texts on a daily basis beyond the classroom.

This thesis foregrounds the importance of the teacher as a co-collaborator with students, creating a classroom environment that offers interest driven learning opportunities and real-world authentic learning experiences. By embracing a multimodal and technological inspired pedagogical approach, educators can engage students in innovative and contemporary learning environments which mirror their experiences beyond the classroom.

Furthermore, the challenge to attune learning environments to the needs of contemporary learners is one which; is demanding for all learners; is collaborative and social; is linked to learners’ motivations; is connected to other activities inside and outside-of-school; and must take into account the acute individual differences of learners and their prior knowledge (Dumont & Istance 2010). This study contributes
to the growing field of multimodal research pertaining to the audio mode and its prevalence as well as its effective use in motivating students to create meaningful texts. One broad research question frames this thesis with two sub-questions which allow for deeper consideration and analysis.

Research question:

- How can contemporary multimodal pedagogies in music education enable students’ meaning-making capacities?

Sub questions:

1. How can contemporary multimodal pedagogies be enacted in music education?
2. How are students’ multimodal meaning-making capacities enabled by contemporary multimodal pedagogies in music education?

1.3 The multimodal case study: Music Elective Multimodal Technology Unit

This research resides within the qualitative research paradigm and is a case study of practitioner research. The research methodology is guided by the aims of the research, examining contemporary multimodal pedagogies and their potential to enhance students’ meaning-making capacities in music education. This thesis examines the pedagogies that are deployed by a teacher-researcher in a New South Wales independent girls’ school, throughout a unit of work based on multimodal text analysis and creation – the Music Elective Multimodal Technology Unit (MEMTU). The unit’s title recognises the critical relationship that technology plays in multimodal text creation, thereby attesting to the value of embracing technological developments to better understand the audio mode.

The MEMTU was an 11-week unit for a Year 10 elective music class of 16 students. This case study focuses on the pedagogies deployed by the teacher-researcher and how
three selected students interacted with these pedagogies. The selected students represented the elective class population as they had a range of skillsets and interests. The case study extends to include the actions, interactions, perspectives and work of the other 13 students within the Music elective. It explores the ways in which contemporary multimodal pedagogies have been used and analyses them using a framework of contemporary pedagogical affordances (Cope & Kalantzis 2013).

The learning journeys of three students are examined as they create a Personal Multimodal Presentation (PMP) within the MEMTU. The case study investigates how the students engage in multimodal meaning-making as they create their own multimodal text, with the priority of the analysis placed on the audio mode. The evolution of practices adopted by the teacher-researcher to meet the learning needs of the students, also provides valuable insight into the shifting role of educators within contemporary music classroom contexts.

1.4 The teacher researcher

As a practicing musician, performer, composer, music teacher and Coordinator of a Music program within an independent Kindergarten to Year 12 girls’ school in New South Wales, I have considerable knowledge about, and passion for music and the audio mode. As someone who frequently engages with technology, I see the potential of integration of technology and more specifically music technology into pedagogical practice. The majority of the music technology-based skills I have acquired were gained through informal learning and experimentation outside of educational institutions. My experience as a musician and performer has assisted me in the development of skills for the creation of audio within recording studios utilising
software and technologies to create music. My skills were gained through a variety of interactions and experiences within the music community and I am still learning and embracing new methods for composition and recording of audio. I have experimented with the creation of music videos and have experienced multimodal composition first-hand. I have been involved in the setup of music technology laboratories in schools and have designed teaching programs utilising technology to accommodate students of various skill levels from Kindergarten to Year 12. I believe that music education is well positioned to contribute to the developing field of multimodal literacies education – especially student development of texts which contain audio and to the development of students’ audio literacies.

As a music educator I have found the interaction between a person and their musical creation is a most rewarding and gratifying element whether it be the creation of a musical interpretation in performance, the composition of a new arrangement of a piece of music, or an entirely new composition. The creative process in music allows a person to communicate in a way that pre-dates human speech (Levitin 2006). The field of music possesses a powerful palette to draw upon that engages and enriches the listener’s experience (Levitin 2010). It is this palette of musical meaning that this thesis explores, in particular foregrounding the audio mode of a multimodal text.

This thesis provides a real-world example of a unit of work which aims to address contemporary learning approaches that are often overlooked in the Music elective in favour of traditional tuition.
1.5 Thesis Organisation

In Chapter Two, I examine literature related to contemporary learners’ identities and needs; the rise of multimodality in the 21st century; pedagogical approaches to the audio mode inside and outside of school; and pedagogical opportunities for audio meaning making in music education.

Chapter Three outlines the research questions and the methodology chosen for the qualitative case study, it also presents the context of the case. It clearly explains what the MEMTU and the PMP entail, and outlines methods for data collection and analysis. The timeline and stages of the case study are also conveyed. This chapter addresses the rationale for, and ethical challenges presented in this research and justifies its value and how these will be overcome.

Chapter Four presents the pedagogical approaches taken in the Music elective. It describes the pedagogical phases as they were deployed throughout the MEMTU. It maps the pedagogical approaches of the teacher and student responses using contemporary pedagogical affordances as an analytical tool.

Chapters Five, Six and Seven present the learning experiences for three students as they created their own PMPs in the Music elective. These chapters investigate the ways in which each student approaches their PMP and how they incorporate their personal interests into their projects. The student names throughout this thesis are self-selected pseudonyms. Chapter Five, ‘Shifting the focus from the linguistic to the audio: Galaxy Girl’s journey in multimodal meaning-making’, examines a student who is a fluent
linguist, possesses classical training in music, and has a keen interest in computer games and outer space. Galaxy Girl’s changing approach to the task and her development of audio metalanguage is analysed throughout. Chapter Six, ‘Utilising the multimodal to refashion a fairy tale: The tale of Cinderella and her love story’, introduces a creative and experimental student, who embodies the skills of a typical Music elective student whose preference is popular style music. Cinderella’s interests are shaped around her relationships and experiences in personally meaningful places. Her experimental style of text creation within the MEMTU will be examined extensively. Lastly, Chapter Seven, ‘Childhood innocence relived through the multimodal’, explores Brigitta’s choices to draw on significant childhood memories as inspiration for her PMP. Her classical training coupled with her improvisational background, enabled her student-led approach throughout the MEMTU. The stories of each student are quite revealing as they have different musical backgrounds, approach the unit from unique perspectives, and position themselves differently within their PMP. Throughout these chapters, contemporary pedagogical affordances are used as an analytical tool and each chapter reveals the instances in which they are enacted in various capacities.

Chapter Eight, ‘Concluding Discussion’, presents a final word about the PMPs, the findings and recommendations, and limitations. The chapter relates the analysis of the case study to the research questions and aims of the study. It suggests future directions for research and implications of the study for the teacher-researcher.
2. Literature review

This chapter firstly identifies the changed communications environment of the 21st century; the characteristics of contemporary learners, highlighting their needs and preferences. It then reviews the concept of multimodality and its impact on meaning-making in the 21st century, exploring the capacities of the audio mode and how it functions within multimodal texts. Thirdly, this chapter reflects on the pedagogies that have been employed in music education in the past and present and how diverse contemporary students make meaning using music in a variety of contexts. Finally, it explores seven pedagogical affordances and their relationship to the opportunities for audio meaning-making for contemporary students.

2.1 Contemporary learner’s identities and needs

This part of the literature review builds on and contributes to work in the field of learner needs and identities by examining the way in which digitalisation of the communications environment acknowledges students’ interests beyond the classroom, extending learning into a broader cultural context. The 21st century communications environment has changed dramatically due to the ubiquity of digital technologies, which in turn has led to a more connected globalised society (Cloonan 2015; Kalantzis & Cope 2012; Mills & Unsworth 2018). As we move to an age with information and knowledge so readily accessible via the Internet, the learning environment and requirements of contemporary learners are vastly different from that of the past (Collins & Halverson 2018; Trilling & Fadel 2009). Changes within society and the workforce call for a new type of citizen, which in turn calls for a new type of learner
Key competencies for contemporary learners include; higher-order thinking skills, problem solving, collaboration and leadership, agility and adaptability, accessing and analysing information, initiative, curiosity and imagination, and effective communication skills (Luna Scott 2015; P21 2014). The focus of education should be ‘social practices and their connections across various social and cultural sites’ with an emphasis on encouraging lifelong learning habits (Gee 2018, p. 6). Learning experiences have also shifted as, contemporary society boasts great cultural differences such as ‘[g]ender, ethnicity… and sexual orientation’, with the balance of agency shifting away from the previously dominant hierarchical command society to that of a ‘society of peer-to-peer reflexivity’ (Kalantzis & Cope 2012, pp. 52-53). The literature demonstrates that contemporary learners are no longer just passive consumers of information, rather, they are active participants in their learning environments (Kalantzis & Cope 2012).

Numerous studies acknowledge that contemporary learners utilise digital literacy practices as a core part of their everyday lives (Collins & Halverson 2018; Lammers, Curwood & Magnifico 2012; Mills & Unsworth 2018; Smith & Anderson 2018). Some have called them ‘digital natives’ who function within a networked environment where instantaneity is of utmost importance (Prensky 2010). For over a decade, students have been communicating through instant messaging (text, picture and video); engaging and collaborating in social media platforms such as Facebook, Snapchat, Pinterest and Instagram; and watching YouTube videos (Lenhart 2015; Oblinger 2008; Smith & Anderson 2018). Throughout these communication processes contemporary learners utilise language and text differently from that of the pre-digital age (Gee 2014; Prensky 2001, 2008). When examining literacy and the influence of digital technologies, there is a strong interrelationship in the way that contemporary learners engage with the
elements of texts and technologies, as ‘children are rarely to be seen simply imitating a media text or narrative. Much more common is an inventive hybridity, where elements of very different texts are integrated’ (Burn 2011, p. 48). Therefore, the literature points to the interests of learners being closely tied to new modes of communication.

When reviewing the studies related to the new modes of communication, creativity is an important factor in adhering to student interests and needs. Creativity has gained momentum as a 21st century skill with greater support in curriculum (ACARA 2018b) and schools and is a cornerstone for success (Glăveanu 2018; Richardson & Mishra 2018). Pedagogies supportive of creativity are characterised by a balance of structure and freedom, whereby mutual respect between the student and teacher is harnessed through an environment where teacher modelling encourages experimentation, co-collaboration, problem-solving and critiquing of ideas (Davies et al. 2013). Contemporary learners anticipate creativity within teaching and learning which can be encouraged through reasonable risks and unpredictable situations that lead to motivation and reinforced creative actions (Morais & Azevedo 2011). As creators, rather than passive observers, contemporary learners mould their literate identities from their personal interests, however, they are asked to don a different identity to operate in the formal school environment (Gee 2004; Honeyford 2013; Karam 2018; Smith 2018b). As such, the research suggests that whilst creativity has been identified as an important factor to student learning, there is still room within the educational setting to better address student interests and identities. Contemporary learners create and operate in a language environment that is constantly evolving, generating a need to consider the level of agency given to students in formal educational environments.
As contemporary learners have different learning needs and live in a different world to previous generations of learners, educators need to address what it means to be literate in the 21st century, the content and the pedagogies employed to deliver meaningful learning experiences in classrooms, and how to address the new learning demands that have rapidly developed due to the proliferation of technology in society. Having considered the changes in the 21st century communications environment and the implication for learning needs of the contemporary student, the following section will focus on how multimodality has impacted the changed communication environment and literacy.

2.2 Literacy in the 21st century – the rise of multimodality

This section examines various understandings of literacy over time and the changes which have occurred in order to encompass multimodal elements due to shifts in the communication environment. Literacy is a social and contextually dependent practice (Street 2003). Its meaning has been heavily contested and is constantly in a state of flux (Walsh 2011). Before the late 20th century being literate in the western world referred to the ability to communicate through an alphabet-based linguistic written and spoken system (Bull & Anstey 2010). In ancient cultures, such as China, Japan, Australian Aboriginal, Central America and Egypt, being literate is associated with writing systems based on characters, petroglyphs, recording systems, or hieroglyphs (Kress 2003). One of the long-standing complexities associated with research into multiple modes of communication is that the written form of linguistics has been privileged over oral traditions, despite the fact that prior to the printing press, oral traditions predated any written forms (Fox 1999). This is important to consider when
attributing value to the various modes present within multimodal texts. Over time, the advances in technology such as the ability to communicate instantly by using text, audio and visual means to almost anywhere in the world, have led to transformations in the roles of different forms of communication (Coiro et al. 2008; Lenhart 2015; Wallerstedt 2013). These advances have naturally had an impact on literacy practices and what it means to be literate in the 21st century (Walsh 2011).

Literacy practices no longer exist just on the page as text, or text and image, but in several dimensions embracing numerous modes of meaning (Bearne 2003; Cope & Kalantzis 2010, 2013, 2015, 2017; Dalton 2012; Jewitt 2013; Kalantzis, Cope & Cloonan 2010; Kress 2010; The New London Group 1996, 2000; Walsh 2011). Whilst reading and writing remain important methods of communicating, the digital landscape has revolutionised the way in which we communicate (Prensky 2008; Smith & Anderson 2018). Mobile phones are prevalent in the global communications environment allowing users to receive, create and share content (Albers & Harste 2007; Lenhart 2015; Luna Scott 2015; Smith & Anderson 2018). As multiple modes of meaning are present in everyday examples of our communications (Bearne 2003; Cloonan 2009), it is no longer adequate to consider modes of communication in isolation – rather it is important that the interrelation and interaction of all of the modes be recognised and explored (Kress 2000b). Due to advances in technologies ‘[t]he complex interplay of still image, colour, moving-image, writing, sound-effects, speech and music is right at the centre of multimodal design’ (Jewitt 2008, p. 53) and readily available to much of the world. To interact successfully in this multimodal world, it is no longer just a requirement to be able to read and write, you must be able to interpret and create meaning through the audio, visual, spatial, gestural and multimodal modes.

For the purposes of this study, drawing on the work of The New London Group (2000),
Cope and Kalantzis (Cope & Kalantzis 2009a, 2013, 2017), Kress (Kress 2003, 2010; Kress & van Leeuwen 2006), Walsh (Walsh 2006, 2010, 2011), and, Gee (Gee 2018; Gee 2004, 2014; Gee & Hayes 2011), being literate encompasses having the ability to communicate effectively using means and resources that are acceptable in the social context of the situation. These means can utilise a combination of the modes that are appropriate for effective communication. The literature suggests that not only must an individual be able to interpret and create meanings in a single mode, they must also be aware of the impact and influences that each mode can have on other present modes and how to interpret and create using multiple modes simultaneously.

In the context of this study, in order to establish a definition for the term multimodality, it is important to grasp exactly what is meant by a mode and text. A mode is a ‘socially shaped and culturally given semiotic resource [used] for making meaning’ (Kress 2010, p. 79). Meaning is communicated through signs or representations of objects, entities, feelings and emotions based on the cultural, social and psychological history of the creator (Kress & van Leeuwen 2006). There are different methods of communication and representation such as speech, written word, moving image, still image, touch, soundtrack, gesture, layout, colour and music and these are used in different ways in different cultural environments that have been developed over time (Kress 2010). Each mode has the capacity of conveying a message in the act of communication (Bezemer & Kress 2014) and it brings deep ontological orientations of society and culture of the creator and receiver with it (Kress 2010). Having defined the term mode in the context of this study, the following paragraph will define the term text.
Whilst the Oxford dictionary defines a text as ‘a book or other written or printed work, regarded in terms of its content rather than its physical form’ (Oxford Dictionaries 2014) there are obvious signs that the make-up of a text and skills required for a person to read and write have changed in the multimodal communications environment (Hull & Nelson 2005). The dominance of the linguistic mode, being written and spoken language, is being challenged by the accessibility of other modes as significant elements of communication (Cole & Pullen 2009; Hull & Nelson 2005). In the new textual landscape, a ‘text’ can consist of any number of modes that enhance, supplement, and contradict each other (Courtney & Carleigh 2017; Godhe & LindstrÖM 2014; Jiménez et al. 2017; Walsh 2008). It is not essential for a text to consist of written language. Texts inhabit various forms but are bodies of work that are complete and can be framed in the same way as that of a painting, so that it is clear where the body of work begins and ends (Kress 2010; Wan & Gut 2011). The literature recognises that whilst a text used to be defined as a printed source, in the contemporary communications environment it can consist of multiple modes. This study will work with the contemporaneous definition.

Considering the above definitions of mode and text as supported by many studies, it is now pertinent to delineate what is meant by multimodality. The terms multimodal and multimodality can be defined as the combination of a number of the modes used to communicate meaning (Kress 2010). Multimodality incorporates social interpretation into the understanding of the various modes drawing on the affordances of each mode and how meaning can be made through their combination (Jewitt 2013). Any number and arrangement of the modes can combine to communicate a message that is arguably more powerful than the same message that utilises a singular mode (Jewitt, Kress & Mavers 2009), as each mode contains its own semiotic resources (Pantaleo 2012). This
study builds on and contributes to work in the research of multimodality, providing additional insights and analytic focus on the audio mode.

It is evident that the rise of multimodality has caused a shift in literacy practices. With continued research into multimodality over time, an understanding of the function and intricacies of modes and texts has continued to evolve and culminate into new perspectives on methods of communication, interaction and meaning-making.

2.2.1 Multimodality research over time

With the continuing research into the function and implications of multimodality, new studies reveal broadening insights into the capacity of multimodal texts. Whilst there is agreement that there are ‘different modes, which serve different functions, work in different ways, and often operate in combination to generate meanings’ (Bazalgette & Buckingham 2013, p. 98) the number and function of the modes are still expanding with research. Initial research into the framework design for multimodal literacy was conducted by the New London Group (2000), who identified and described six significant meaning-making modes – linguistic, visual, audio, gestural, spatial and multimodal design; multimodal referring to the integrated meaning-making systems of other modes. The linguistic mode encompasses written and spoken language; the visual mode includes still and moving images; the audio mode comprises of the sound track including speech, music, sound effects and environmental sounds; the gestural mode covering facial expressions and body movements; the spatial mode embracing the use of space, location and area; and multimodal which referred to not just the sum
of the other modes but the processes of integration and changing of emphasis between the various modes (Cope & Kalantzis 2000a; The New London Group 2000).

Whilst multimodality has been ever present in the communication landscape it has gained recognition in academic research and publication in the last 30 years (Kaltenbacher, Charles & Ventola 2004). Over time, research has separated modes further, revealing a deeper understanding of their function and potential for interpretation. Kress (2010) purports that spoken and written language are separate modes, along with the modes of colour and layout (Kress & Van Leeuwen 2002) being separate entities from the visual mode as they each contain deep social and cultural meanings. Another considered mode is ‘touch’ when it is utilised in the form of carrying a message (Bezemer & Kress 2014). ‘Time’ is also a potential mode, as it impacts on all modes and how they are interpreted (Bazalgette & Buckingham 2013). Whilst gestures, music, audio and moving images seem the obvious modes to interact with time, even the font size, spacing and layout of a printed book impact on the pace at which it is read (Bazalgette & Buckingham 2013). If this is the case then all forms of communication, including printed texts, can be described as multimodal to some extent (Kress 2010).

Multimodal texts offer flexibility in creation and analysis due to an adherence with more than one mode. The widespread capacity for the creation of multimodal texts, particularly through ubiquitous technologies, such as mobile electronic devices, is forcing an examination of the role of modes other than language and their functions within literacy (Burn 2014; Cope & Kalantzis 2015; Kaltenbacher, Charles & Ventola 2004; Rowsell 2013; Smith & Dalton 2016). Modes of meaning other than language have been recognised as playing more than a supporting role to written language; and
are capable of creating sophisticated meaning in their own ways (Jewitt 2009). Multimodal texts can be analysed by separating the individual modes, through the ways in which the modes interact with each other in various combinations, and through the sum of all of the modes (Kress & van Leeuwen 2006). The art of deconstructing the multimodal messages so that they can be understood, adapted and reconstructed for new contexts is a fundamental skill required to exist within today’s society (Kress 2010). In previous eras the photographer would be the expert in image, the typesetter would be expert in visual elements of setting pages in a newspaper and other discrete professions were the holders of particular subsets of skills that were once deemed as only being able to be performed in an isolated context (Kress & van Leeuwen 2001). However, the digital age has transformed the hierarchy of the previous monomodal world by providing easy access to create in multiple modes. Evidently, individuals now operate within multiple fields by utilising the digital tools that are available (Wan & Gut 2011), and the relationship between multimodality.

In multimodal meaning-making practices and events, individual modes operate both independently of and simultaneously with one another to convey meaning by enacting the different semiotic resources that are present within each mode (Rowsell 2013). This allows the receiver a range of interpretations based on their previous social and cultural experiences (Kress 2010). So multimodal texts are not reliant on written or spoken language to convey meaning, as any of the other modes also offer affordances to convey powerful meanings on their own (Jewitt 2009). Rather, if one were to freeze a multimodal text in time, it would be seen that each mode makes its own distinctive contribution to meaning that in one moment might be dominant or complimentary to the other modes and in the next instance convey an entirely different meaning (Kress 2009). In this way modes cut across the visual, auditory, gustative, tactile and olfactory
sensory channels and can be realised in different media ‘e.g. speech and writing as variants of the linguistic mode’ (Kaltenbacher, Charles & Ventola 2004, p.11), visualising a piece of music as a way of interpreting the audio mode (Rowsell 2013), and gaining a sense of taste from visualising or smelling a piece of food (Howes 2009). The sensory channels are closely connected to the modes of meanings as they allow the receiver to accumulate meaning through physical and material means (Kress & van Leeuwen 2001).

Each mode offers different potentials for meaning-making through the way they are transcribed (Kress 2010). Written or spoken language can describe an event, visual image will show an event, and audio and sound will let a listener hear an event. Written and spoken text, similar to audio, form narratives that are generally structured in a logical order, in comparison to still image where all the information is available instantly giving an interpreter a more flexible means of making meaning as all of the image is presented at the same time (Böck & Pachler 2013). It is possible for different modes to contradict each other and have different meanings based on the social and cultural experiences of those involved (Lemke 2002). Multimodal meaning is context dependent, as textual meanings are connected with the social interests of those who create and interpret them (Burn 2008). Artefacts taken out of context can change their meanings as the interpreter utilises their own understandings to make meaning, for instance, a Desana artefact that exhibits smells from the rainforest loses the meanings of these smells when placed in a museum display (Howes 2009). Globalisation and technological advancement have led to information and cultural identities easily being shared between people located in different parts of the world, the rate of new signs appearing in general society is increasing rapidly. The research examines the reshaping
of meanings of various modes suggesting that the communicative landscape is constantly evolving.

The digital landscape in which multimodal communication is not only accessible to all, but has become the norm, has changed the social relations of meaning-making (Cope & Kalantzis 2009b). Texts are created for real contextual situations with the intent to communicate a message that contains attitude, belief and prejudices ‘whether authors or readers are consciously aware of this or not’ (Kress & van Leeuwen 2006, p. 120). Meaning is socially situated and culturally constructed as creators (authors) and consumers (readers) ‘share and articulate different characteristics of themselves with different groups’ with identities shifting with different contexts (Hagood 2014, p. 532). The process of communication relies on individuals identifying, framing, and interpreting signs regardless of the mode in which they occur (Kress 2010). Meaning is constantly changing through normal transformational processes as creators and consumers adjust their interpretations of the signs of the modes to best fit the context (Hodge & Kress 1988). With the increased access to multimodal texts in society there is a need for a shift in literacy education from texts that involve the written mode to those that incorporate several modes.

**The need for a multimodal shift in literacy education**

As texts have transformed from monomodal entities into complex multimodal representations and technology has put at hand the capabilities to create and deliver multimodal knowledge representations through digital means, learners should be operating in this field in a practical manner (Cope & Kalantzis 2013). In contemporary classrooms, multimodality is being brought to the fore as digitisation increases the dominance of texts featuring modes other than written language (Howell 2016;...
Kimberly 2018; Kress 2000a; Walsh, Durrant & Simpson 2015). Whilst this new environment is yet to gain stability and multimodality is being approached through the teaching of individual subjects with isolated skill sets, it is a large scale social change that educators need to harness (Boche & Henning 2015; Cope & Kalantzis 2015; Kress & van Leeuwen 2001; Luna Scott 2015). The literature indicates that there is great potential in harnessing multimodal pedagogical approaches within classroom settings, and this study will seek to contribute to an understanding of multimodality in practice. It is pertinent to examine the way in which curriculum has addressed multimodality, as will happen in the review below.

Current curriculum approaches to multimodality

The section discusses the incorporation of multimodality within curriculum documents, examining the focus on the visual mode and potential opportunities for the incorporation of other modes in a more meaningful way.

The art of communication has long been dominated by linguists with a focus on reading and writing, and speaking and listening using words (Mayer 2014). Of the other modes of meaning, the visual has attracted the most scholarly attention (Kress & van Leeuwen 2006). When examining the emergence of multimodality in the educational context within Australia, it is clear that there has been a clear link attributed between literacy and the engagement with multimodal texts, however, there is still a tendency to privilege some modes over others. This is particularly evident when examining the general capability, Literacy, within the new Australian Curriculum, where multimodal texts are defined as ‘texts combin[ing] language with other means of communication such as visual images, soundtrack or spoken words, as in film or computer presentation media’ (ACARA 2015). This definition is then
narrowed within the National Literacy Progressions descriptors, which define multimodal as ‘a combination of two or more communication modes (for example, print, image and spoken text, as in film or computer presentations)’ (ACARA 2018f). This document demonstrates promising mentions of the multimodal. It is referenced five times in the Understanding texts component, dictating the need to examine the modes in relation to visual and audio cues to build meaning. However, fundamentally the examples provided still have a strong focus on the interaction of the visual and linguistic modes, such as the example of building meaning in multimodal texts through ‘colour, shape and size of images, sound effects’ (ACARA 2018g). All other mentions of multimodality in the ‘understanding texts’ area of the National Learning Literacy Progressions revolve around the interpretation, comparison and contrast of visual elements, with ‘auditory’ elements mentioned sparsely. Of particular interest is the fact that the ‘speaking’ sub-element of this document, acknowledges the existence of the audio mode, however, encases this in the guise of producing a spoken, or visual text, as conveyed in the descriptor a student ‘includes multimodal enhancements to spoken texts, where appropriate (includes slides or pictures in a spoken presentation)’ (ACARA 2018h). The ACARA documents for Literacy General Capabilities reference the way in which the visual mode can complement written, spoken and digital texts and that literacy involves the reading, viewing, speaking, writing, listening and creating of language for different purposes in a range of contexts (ACARA 2015). Although this change in policy recognises that literacy is evolving, and that we need to address it in different ways within our educational environments, further attention needs to be given to the other modes, in particular the audio mode, that predominate the multimodal communicative landscape.
Whilst multimodality has captured the attention of many researchers, the focus of academic attention has been dominated by the visual mode in comparison to other modes. The idea that ‘people learn better from words and pictures than from words alone’ (Mayer 2009, p. 1) is the basis of Mayer’s multimedia learning approach (Mayer 2014). This idea has been particularly evident as print dominated texts have shifted from only including the written word to incorporating graphics, images and other visual stimuli in contemporary culture throughout the 20th century (Pahl & Rowsell 2012). Multimedia learning featuring the linguistic mode and the visual mode require the learner to; select relevant words; select relevant images; organise words; organise images, and; then integrate them so that a meaning is communicated (Mayer 2014). This cognitive processing draws upon the person’s contextual knowledge and experiences.

The visual mode is powerful and it functions as a communicative mode just as seriously as the linguistic mode (Kress & van Leeuwen 2006; van Leeuwen 2001). Visual semiotics functions around the key idea of layering of meaning within an image (Barthes 1988). Barthes (1988) divides image into layers of meaning known as: denotation and connotation. Denotation describing the image in terms of who and what, and connotation describing the values and ideas that are represented (van Leeuwen 2001). Whilst technological advances in the printing process and electronic displays led to the rise of the importance of the visual mode as a means of communication, which in turn provided strong argument for studying its affordances and interactions for meaning-making, current advances in technology have led to the other modes, such as the audio mode, gaining status as communicative meaning-making modes amongst scholars, although more research is required into understanding the extent of the affordances of these modes.
By reviewing both research and curriculum documents, numerous studies have identified the necessity to focus on modes other than the written and demonstrated that in the past, the visual mode has often been privileged when considering multimodal meaning. Although studies in the audio mode have emerged, there is a lack of curriculum acknowledgement as well as research into its potential when considering multimodality within educational settings. The following section of the literature review will focus on the capacities of the audio mode and outline its use in various contexts and limitations within the field of research.

2.2.2 The capacities of the audio mode

The audio mode as a meaning-making mode has received less academic attention than the visual as the three components; speech, music and other sounds (sound effects and environmental sounds) have been treated individually and practised as separate disciplines (van Leeuwen 1999). Speech (spoken word) is not only a component of the linguistic mode but also that of the audio mode as the design of its delivery plays a major part in its impact on meaning-making (The New London Group 2000). The audio mode is a social semiotic resource with material such as speech, music, and other sounds creating meaning through the affordances of pitch, duration and tone colour (Kress 2010). So the overt gap in research and literature is that the audio mode possesses great potential as a meaning-making resource in the multimodal environment but its potential is yet to be fully explored ‘because sound is such an under-explored semiotic terrain’ (Gall & Breeze 2005, p. 15). Rowsell (2013) shows that in multimodal creation, the audio can be privileged to lead the creative process,
with other modes interweaved at contextually relevant times. Rowsell (2013) emphasises the need for pedagogy to reflect the complex multimodal understandings outside of the classroom in what professionals do, to fully comprehend the multimodal meaning-making.

The audio mode has long been recognised as a meaning-making resource in the form of spoken language. However, the audio mode is not only a means to communicate language. It also contains the elements of sound, including incidental noise, deliberate noise or sound effects, and music (van Leeuwen 1999). To fully comprehend the capacity of the audio mode, it is important to distinguish music from sound. The definition of music is one that has had much debate, although it is generally considered to be the use of organised sounds (Kahn 1999). Thus, environmental sounds, man-made mechanical and non-mechanical sounds, are not considered as being musical, unless they have been used in an organised manner achieving the deliberate use of musical concepts of structure, duration, pitch, texture, tone colour (timbre) and dynamics and expressive techniques (Kamien 2004). Musicians consider music to be the ‘arts of sound’, which continue the traditions built up over centuries of what constitutes music as opposed to sound. (Kahn 1999). The literature reveals that the audio mode has multiple elements within itself, evidencing the complexity of analysing audio elements.

Since the ancient Greeks, musical phrases and gestures have been considered to have an effect on emotions by often depicting natural human motion through regular rhythms and melodic modes that conjure mental tension (Zohar & Granot 2006). Musical language could be considered the language of feeling and is able to cross many social and cultural boundaries (Cook 2001). Whilst the audio mode in everyday life used to feature a predominance of musical sounds; bells ringing, singing of songs in
the work place, a postman’s horn, a sung mass – these gave way to mechanical and electronic sounds, and spoken prayer (van Leeuwen 1999). Music moved into the concert hall and its purpose altered from one of which could be used to express meaning in everyday life, to an elite social event isolated from daily ritual (Müller 2010). Art music became the domain of the wealthy and those who aspired to raise their social status, although there were always a range of classes evident at the events with multiple classes of tickets and seating available (Johnson 1992; Müller 2010).

In contemporary society ‘most people are exposed to music every day, whether it is voluntary … or not’ (Weisgerber et al. 2013, p. 379). We hear music in shopping centres, in advertising, in television shows, via the radio or streaming services on the Internet, in daily rituals and as part of important events (van Leeuwen 1999). Increased accessibility is due to advances in technology, making music much more widespread and readily available for listening (Weisgerber et al. 2013) and creating (Partti 2014). Not only has music become more readily available, but the palette of audio tools allows for greater communication through speech, environmental and electronic sounds along with music (van Leeuwen 1999).

The links between the visual and audio mode combine to have greater impact and to enhance the message that is being conveyed (Kalantzis & Cope 2012). Individuals have personalised audio ringtones for their mobile phones that match the representation of their clothing or hairstyle or are indicative of how they visualise the caller (West 2009). Recent research explores the power of sound in portraying the psychological landscape of unique student identities, through sonic cartography, examining how emotional experiences and authentic representations of self can be
reflected through audio to complement other modes (Wargo 2017, 2018). The audio mode can thereby be used as a tool for representing facets of identity.

As a meaning-making resource the audio mode can operate in isolation or in conjunction with the other modes, as it requires just the auditory sense to be received. Humans interact with the audio mode from before birth (Hepper 1991) and studies have shown the powerful nature of the audio mode from conception. This is illustrated when a baby can be calmed through recognition of its mother’s voice (Hopson 1998). We utilise speech when communicating with people directly rather than sharing a piece of written language. Music and other incidental sounds also create and convey powerful meanings whether accompanying spoken language, written language, moving image, touch, gestures or other modes. Sound has long been a tool for filmmakers in actively shaping the meaning of moving images by enhancing, contradicting or anticipating an event or emotion (Bordwell 2013). ‘Music is present in some form in all human cultures’ (Winkler et al. 2009, p. 2468) and many of the elements that we use to analyse music can be borrowed to provide a deeper analytical understanding of the audio mode.

Important elements of the audio mode are that of time, perspective, interacting sounds, melody, and voice quality and timbre (van Leeuwen 2001). These elements can be aligned with the musical elements of duration and structure (time), dynamics and expressive techniques (perspective), texture (interacting sounds), pitch (melody), and tone colour (voice quality and timbre) (Kamien 2004). Whilst these elements can be spoken about in isolation, it is important to realise that they occur simultaneously in the audio mode (Kamien 2004). These interweaving elements that have long resided in the field of music may provide useful analytical understanding to the audio mode.
and how it interacts in a multimodal context. As ‘[s]ound has the ability to bypass the linguistic system of awareness and stimulate emotions in ways that we are less verbally conscious of’, it can be used to manipulate our actions (West 2009, p.285). Major modes are generally characterised as happy and minor modes are generally characterised as sad (Korsakova-Kreyn & Dowling 2014). Aesthetic emotions derived from music can be characterised by personal subjective experiences of cultural contexts (Korsakova-Kreyn & Dowling 2014). There is much to learn about how mood and emotions can be influenced through interactions with music. However, mood can be altered via music by allowing the reflection of life events and cognitive reframing occurring, creating the opportunity to enhance emotions that the listener is experiencing, creating connections with others who are sharing the experience, and by acting as a diversion that is mentally or emotionally engaging (Garrido 2014). Thus, the context of the meaning-making resource impacts on the way in which it can be interpreted.

In ensemble performance and improvisation, musicians respond to visual, gestural and spatial cues along with audio signals to create meaning for themselves and their audience (Keller et al. 2014). Musicians often play concurrently, utilizing specialised cognitive-motor skills to anticipate, adapt, and attend to one another’s actions in real time’ (Moran et al. 2015, p. 3). Studies have shown that cognitive processes are higher when integrating emotions from multiple sensory modalities (Vines et al. 2011). As modes interconnect and meaning translates from one mode to another in various ways, synaesthesia occurs (Kress 2010). Whilst musicians frequently operate in isolation, it is clear that connections exist between music (a subset of audio) and the other modes. Burn notes that in a study of playground games, poetry and media, it was significant to consider the audio mode as a means for accessing insights into literacy, as ‘Music,
then, is a good place to begin expanding, if we want to encourage children to see how most cultural forms combine modes rather than stick to one’ (Burn 2011, p. 49), suggesting the complex interrelationship between the modes and how this can be accessed by focusing on the audio mode. Music evokes emotion, visual imagery, a connectedness between the visual of performer and what is heard, the touch of playing instrument, gestural meanings, spatial meanings, and of course aural meanings.

The literature highlights that although many studies have been conducted into the audio mode, the way it functions in a multimodal environment is still an area of opportunity for research and further studies. The following section examines the interactions and the transference of meaning between the audio and visual modes as utilised by professional composers and artists.

**Synaesthesia and the relationship between the audio and the visual**

In synaesthesia, the transference of one sense to another comes in the way of substitution of a sense, as demonstrated when a blind person hearing the sounds of the environment and painting a visual image based on sound (Proulx 2010). ‘In auditory–visual synaesthesia, all kinds of sound (e.g. music or single tones) can induce additional visual experiences, as for example colours, forms and textures’ (Neufeld et al. 2012, p. 85). Russian composer Scriabin demonstrated the early use of a colour wheel to accompany his music compositions inspired by the Promethean myth (Partesotti & Tavares 2014; Vanechkina & Galeyev 2017). Interestingly, Scriabin’s examples show the interrelationship between a once oral text, which following his education in classical mythology, inspired his musical composition of the same name. He then added the visual mode, through the colour wheel, suggesting that musicians
have long looked beyond the audio mode to inspire the creative process. Similarly, Kandinsky associated instrumental sounds with certain colours in his own academic publication (Katherine 2004).

Composers have long used ‘tone painting’ to deliberately generate an image, scene or phenomenon from outside the realm of music (Patel 2010). Connections occur between the sensory channels and then meaning can be made by the receiver. For instance, the idea of texture can be grasped through hearing the sound of a hoarse and gravelly voice and recognising the experiences associated with this condition in one’s own throat (Kress & van Leeuwen 2001). Music has been found to have the ‘ability to evoke a sense of motion in a listener’ (Patel 2010, p. 319) whether it be a sense of self-motion or motion of physical objects moving (Clarke 2001). This sense of motion comes from the human tendency to synchronise to a musical beat, although music does not need to have a strong beat to create a sense of motion (Patel 2010). For example, long sustained chords played softly can create a sense of calmness and represent slow moving natural scenes. Pitch height and loudness are amongst characteristics of music that can create visual and spatial imagery for receivers and these occur in the same section of the brain that triggers visual, kinaesthetic and movement (Zohar & Granot 2006). Audio is considered a vital mode in determining a spatial understanding, despite the obvious connotations of the visual mode, with several studies revealing the power of spatial awareness from audio triggers (Spence & Driver 1997). The correspondences between the material qualities perceived by different sensory organs allows for transference across modes and mediums, for example, ‘loud’ colours, ‘warm’ colours…‘bright’ sounds, ‘sharp’ sounds and ‘dull’ sounds (Kress & van Leeuwen 2001, pp. 66-67).
The literature acknowledges the relationship between the audio and other modes when engaging in the creative process. As we become aware of the potentials of multimodal connections with the audio mode, we must adapt the pedagogies that are employed in the classroom to cater for the changing shape of literacy in the 21st century.

2.3 Pedagogical approaches to the audio mode through music education

This section outlines contemporary out of school experiences of music and compares these with experiences within the context of music education within classrooms.

2.3.1 Contemporary out of school experiences of music

In western and many non-western music teaching traditions, a student learns music formally from a master who imparts their knowledge and skills to the student through practical demonstration (Westerlund 2006). In this teacher driven apprenticeship tradition, the student relies on the teacher as the holder of knowledge and entrusts them to set learning goals that are appropriate for them to progress (Westerlund 2006). Formal learning often aims to develop a concert player, with technique being critical, and utilises traditions associated with western classical music (Cope 2002). However, a large proportion of the ‘world’s musical heritage has been created, learnt and performed through systems of ‘informal’ education’ (Mans 2009, p. 83). This is particularly evident in non-western cultures and also in popular music genres. The majority of music lessons in contemporary society contain components of both formal and informal learning (Green 2012b; Jenkins 2011). It appears that there are areas of
opportunity and potential to consider the value of informal and experiential practices within the teaching and research of the audio mode.

The digital revolution has changed the way in which contemporary students learn and think (Prensky 2001) and this is also becoming evident in music (Cain 2004). Contemporary learners require different sets of skills than their predecessors largely due to the tremendous growth in technology. This is particularly relevant for music students who outside of the classroom, listen to recordings of music, watch YouTube clips of live performances and tutorials about how to play a particular songs, read varying forms of notation from traditional (music notes on a 5 line staff) to chord charts and different versions of tablature, and they teach and learn in small groups (Green 2002). This is similar to the progression of learning for musicians in popular genres, which advances from imitating songs to creating arrangements of songs to, creating their own music material (Martin 2012; Woody 2007), including re-mixes, songs using loop-based sequencing, and completely new material (Burwell 2012; Crow 2006; Väkevä 2010). Technology has also added a dimension to the ‘apprenticeship tradition’ of students learning classical music, where a master teacher drives the learning goals of the student (Westerlund 2006). In addition to the traditional teacher student relationship, students also have access to countless recordings and YouTube videos of performances through the Internet to model their performances on. This addition presents challenges to the power relationships between teacher and student, with the student having access to many other expert performances of which to model their own playing upon, not just that of the teacher (Green 2008). Whilst the majority of studies indicate that the technological environment has influenced the access to and teaching of music, privileging informal encounters, there is little consideration of the
interrelationship between specific audio elements and other modes to inform the
teaching of music.

There has long been a stereotype that to be a musician, you must be able to play an
instrument (Gracyk 2004). The notion that a musician must be a performer on a
traditional instrument is one that can be challenged in contemporary times, as it is no
longer a pre-requisite to be able to play an instrument or sing to be a creator of music
(Crow 2006). It is possible to create and manipulate audio to communicate through the
use of sequencing, DJing (live remixing), collective song-writing online, and remixing
of entire songs (Väkevä 2010). This access to music creation tools has had an impact
on how people can interact with music outside of school and how people can create
their musical identities (Partti 2014). There are numerous different roles available in
the production of contemporary music utilising various digital arranging, producing,
ingineering and mixing techniques where people need little to no formal training in
playing an instrument or music theory (Tobias 2013). Technology has changed the
meaning of musical literacy so that it no longer relies on the ability to read and write
music as it can be realised in different ways (Kwami 2001). The literature suggests an
opportunity for educators to embrace the out of school music technology practices
making the Music elective as accessible to students as their daily informal interactions
with music.

Music sourced from student interests out of school is often closely tied to a connection
with their identity. The subsequent literature supports the notion that student interests
and music choices are highly personal and meaningful. The type of music listened to
informs one’s musical identity and gives them a social profile based on music
preference in society (MacDonald et al. 2002). As children enter adolescence they
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often form deep connections with their musical identities making connections with their favourite artist’s lyrics, fashion sense, political views and beliefs (MacDonald et al. 2002). Even something as simple as an adolescent creating a playlist and sharing it with a friend ‘allows them ownership and affords them musical identity’ (Crow 2006, p. 125). Adolescent’s informal musical activities are mostly undertaken for enjoyment, being voluntary, and in this way, they are able to pursue their interests that further inform their identities (Gracyk 2004; Jaffurs 2004). As demonstrated in the research, another area of opportunity for educators seeking to engage students is to target their personal interests and musical identities which are formed primarily outside educational settings.

In this section the literature contributes insight into the potential for utilising out of school music practices in the school context to facilitate engagement and better align with student identities. With the advent of the digital revolution, contemporary students in their out of school lives have the ability to easily create multimodal texts that combine multiple meaning-making modes. The ability to reinvent musical material is within reach of the contemporary student in their out of school lives. Using software such as GarageBand it is possible to tweak mixes in new creative ways projecting oneself into a multimodal creation that acts as an ‘individual expression’ of communication (Väkevä 2010). These creations are not limited to musical creations, as technology has provided the means for multimodal creation at most students’ fingertips through the use of smart phones. Students have easy access to online communities to share their creations and ideas, and discuss the multimodal creations of others (Partti 2014). Not only can students engage with computer software in a music learning environment outside of school, but they frequently participate in informal group music learning situations especially for those interested in popular
genres of music (Green 2002, 2008). Students are also involved in traditional ensemble experiences such as community band programmes, youth orchestras and various choral ventures. In this way music students engage in multiple dimensions and modes with the music that has influenced their identity outside of the school environment. Thus, prompting a detailed examination of music educational practices that occur as part of formal education.

2.3.2 Approaches to music education in schools

Despite the rich musical dialogue and the learning through experiences of real musical playing and feeling that occur outside of school, inside school musical instruction seems to have deviated from the things that make music learning so unique and powerful (Ross 1995). In schools, ‘music knowledge is presented as atomistic, static and transmittable – yet students know that music is personal, emotional, physical, unnameable, complex, connected and enormously diverse’ (Stewart Rose & Countryman 2013, p. 47). Attempts to conform music pedagogies to align with other subject areas has seen the development of rigid and precise definitions that shape the classroom programme through a teacher-centred pedagogy. The way in which schools apportion time and label subjects such as band, choir, music technology and music theory marked by boundaries of methodologies such as Kodály and Orff impact the social connectedness of music education that students receive (Richerme 2013). Thus, denying students the opportunities to construct and communicate their own understandings using language moulded through their experiences outside of the classroom (Bowman 2003; Stewart Rose & Countryman 2013).
Recent approaches to music education have attributed value to the use of technology. Research into the use of technology in relation to teaching and learning practices recognises the power of technology in ‘fostering creativity and bridging knowledge gaps for students with less musical experiences’ (Kardos 2012, p. 151). The value of technology is also acknowledged by the current National Curriculum documents, including the Literacy capabilities and the soon to be released Arts and Music Curricula. However, these documents present general overviews, ‘expectations and…learning environments that are not technologically aligned’ (Crawford & Southcott 2017, p. 361). The relevance of technology in music education is understood, yet, there ‘appears to be a disconnect between the music curriculum writers and their understanding of how technology could be embedded’, as their ‘statements are not contextual and lack in-depth guidance about the pedagogical change required to accommodate innovative teaching and learning expectations’ (Crawford & Southcott 2017, pp. 353-354). Outside of the classroom, students have a deep multimodal engagement with technology, yet current documents only accommodate technology as a communicative resource (Leong 2012). It is clear that technology is an important tool that needs to be effectively embedded into the teaching and learning practices within the music classroom, an area of opportunity for upcoming curricula planning and roll out.

Whilst music is a socially collaborative learning experience in school, it is often unrelated to the musical identities of the students. The big three European music methodologies, Orff Schulwerk, Dalcroze Eurhythmics and the Kodály method engage in student centred learning activities that promote the learning of musical skills to enhance the whole child (Göktürk-Cary 2012). They each utilise movement, singing, playing instruments, and learning the musical elements through activities in a
multifaceted learning approach (Juntunen & Westerlund 2011). Whilst the advancement of musical skills and the enhancement of the whole child were the aims of the programmes, most instances where these programmes are delivered offer very little, if any, connections to the musical lives of students from outside of the school, making them irrelevant to many adolescent students (Juntunen & Westerlund 2011). Most of the musical material used is taken from folk music and in many cases folk music from other countries (Juntunen & Westerlund 2011). Utilising music other than what students connect with in their out of school lives regularly, creates an immediate disconnect between school music and music in society. Despite this lack of connection to many students, these three methodologies engaged multiple sensory functions in the development of musical skills: listening to many different styles of music, touching the beat and playing music through movement activities and playing on instruments such as xylophones, and visually reading and interpreting notation (Frego 2013; Jorgenson 2010; Williams 2013). These three methodologies are still present in some schools in Australia as some school music programmes seek to utilise methods proven in another era and social context in their teaching of music skills despite the obvious disconnect.

Appearing in the 1970s and dominating the 1980s music classroom was the ‘creative’ music movement, as a place where everyone could take part similar to creative writing, creative drama and creative dance (Paynter 1972). Student centred creative learning involved manipulating the building blocks of music that students had experienced, including the promotion of experimentation with unusual sounds that were not commonly associated with music, drawn from the contemporary avant-garde art music of the period (Paynter 1972). Whilst recognising that singing or performing composed music had value, the movement encouraged the study of the basic music principles of
the performance piece as a way of gaining more knowledge to utilize in composition work (Meyer-Denkmann, Paynter & Paynter 1977). Whilst the creative music movement offered a student centred compositional and creative approach in the music classroom, and it did not focus on mainstream classical music, it utilised atonal and other 20th century techniques as the stimulus material which again caused it to be irrelevant to the musical identities of the majority of the population (Green 2008). There are similarities between the aims of the creative music movement, Dalcroze, Orff, and Kodály methodologies and contemporary composition present in schools today. They all endeavoured to encourage students to create using building blocks gained through experiences. However, the experiences where the building blocks of music are gained are different in each method and in most cases unrelated to students’ outside-of-school musical identities.

The formal music educators of the past appear to have been delivering music education utilising content that was based around Art music as opposed to popular music which was and is still seen by Art music musicians as being of a lesser status in design and intricacies. Music education was being channelled towards a niche where Art music was deemed as the canon that must be studied with other forms of music being deemed unworthy, similar to the canon of texts in the English classroom. This raises questions as to the purpose of music education and the attempts of policy makers to keep music education in schools an elitist subject only relevant to a small percentage of the population. Rationale statements in Music syllabus documents proclaim that the study of music is for all students to experience real-world music making:

The nature of musical study also allows students to develop their capacity to manage their own learning, engage in problem-solving, work collaboratively and engage in
activity that reflects the real world practice of performers, composers and audiences (Board of Studies 2003, p. 8).

However, within the same document, specific levels of attainment are given for individual concepts of music, compulsory contexts are listed for study, and a focus is given to becoming a well-rounded musician who is aware of musical traits coming from a variety of periods of music (including Medieval, Renaissance, Baroque, Classical, 19th Century, 20th and 21st Centuries, and Music of Other Cultures). The literature reveals that even current syllabus documents still tend towards focusing on Art Music which narrows the scope of opportunity for students who are not musically trained. Furthermore, the lack of an update for the 2003 Music syllabus has meant that the pace of change within music education in New South Wales has not kept up with the technological and musical progression in society beyond school.

The literature in recent years, has also identified that music learning in the classroom can benefit by using informal approaches adopted from real world Music learning situations (Dunbar-Hall 2009; Green 2002, 2005, 2008, 2012a, 2012b; Jaffurs 2004; Jeanneret 2010). Studies have been undertaken investigating the ‘meaningful music making in out-of-school situated practices’ for younger children (Tomlinson 2012) focusing on early life experiences with music (Ilari 2009) and children’s playground games (Harrop-Allin 2017; Marsh 2008). As Burn notes, the ‘archaeology of their play can uncover the foundational elements of poetic language’ (2011, p. 50), further validating outside of classroom experiences. When considering literacy using a multimodal approach, Burn recommends ‘work[ing] with music teachers, to work out how language and music combine to make meaning’ (Burn 2011, p 49), pinpointing a valuable area which has been overlooked in even the most recent of curricula.
documents. Unfortunately, ‘embodied and situated music making found in “everyday life”’ has not been acknowledged as linking with conceptual knowledge of music in our classrooms (Tomlinson 2012, p. 42), especially in our secondary schools. Recent studies into multimodality have begun to acknowledge the need to harness the audio mode in literacy education. A beneficial study is that of Rowsell (2013), who encourages learning experiences to parallel the experience of out of school professional music production and recognises the links between linguistics and sound, for example the interplay of melody and lyrics. Furthermore, Rowsell (2013) aptly emphasises the need to be aware of how music is composed and produced outside of school and transfer this understanding within school contexts. Recent literature contributes to the overall argument that embedding out of school experiences and informal approaches into the music classroom would benefit students, however, there is an absence of literature which examines this with specific ties to multimodality.

There have been attempts to make the learning of music in school more authentic to the ways in which popular musicians experience their learning of musical skills. The Musical Futures program targets relevance and incorporates the learning styles of popular musicians into the classroom with the teacher acting as a facilitator rather than as a teacher (Jeanneret 2010). The program has been trialled in schools in the UK, USA and Canada, and locally in 10 Victorian government schools (Green 2005; Jeanneret 2010; Wright et al. 2012). Initial reports on the programme are encouraging with students and teacher alike praising the new approaches adopted in the classroom (Jeanneret 2010; Wright et al. 2012). The program mirrors the progression of learning for musicians in the popular genre advances from imitating songs to creating arrangements of songs to finally, creating their own music material (Woody 2007). Research into the Musical Futures program suggests that despite engaging with
popular music over a sustained period of time, there is still a disconnect between students’ outside-of-school music interests and that within the classroom (Hallam, Creech & McQueen 2018).

Music education has much to offer the multimodal communication landscape, by increasing understanding of the audio mode within multimodal texts, but it has instead remained in isolation to maintain the integrity of an art form that policy makers deem to belong separate whilst attempting to train musicians in the art of performance and composition. Despite superficial attempts to demonstrate connections between subject areas, they operate mostly in segregation (Crawford & Southcott 2017). In New South Wales, statements of general capabilities and cross curriculum priorities that claim to link the individual subject areas, neglect to fully explore the 21st century multimodal communications environment. As on the surface these statements claim to ‘encompass the knowledge, skills, attitudes and behaviours to assist students to live and work successfully in the 21st century’ (Board of Studies 2015), they offer little advice for connections to be made between subject areas and promote content driven subject areas that offer little opportunity to collaborate and draw upon the skills of experts in the different modes to boost multimodal learning. This means that individual subject areas, which are not mandatory for study and barely relate to one another in execution, focus on individual modes in isolation without addressing multimodality. For example, Music Years 7-10 in New South Wales focuses on Performance, Composition and Listening based assessment in a context of developing skills as musicians (Board of Studies 2003). There is no option for students wishing to develop their skills in audio meaning-making within multimodal contexts at a Higher School Certificate level, nor at lower school levels. The Music Extension Course affords students 100 per cent of their marks to be attained through the performance, composition or musicology
elective (Board of Studies 2000). Many of the students who study this course have learnt their music performance skills outside of the classroom since early childhood and now receive recognition for work that their classroom teacher has made minimal contribution to refining as a component of their Higher School Certificate course. The subject area that arguably possesses the most knowledge about the audio mode, does not provide students with any contribution to multimodal literacy, instead this is isolated within the English curriculum, taught by teachers who arguably do not possess the same skill level in the audio mode as Music educators, nor the visual mode as Visual arts teachers. In sum, it appears that the needs of contemporary learners and their interest are not being addressed in relation to the audio mode within school contexts. While Music possesses a huge platform of opportunity for exploring the audio mode in multimodal text creation, it has remained an isolated elective where this pedagogical potential is not yet realised.

2.4 Pedagogical opportunities for audio meaning-making for contemporary learners (in music education)

The potential to transform the learning experience for music students within the school environment can be harnessed by focusing on audio meaning-making within multimodal projects, rather than isolated musical skills. Audio meaning-making has gained some attention within the multimodal research community but there have been minimal studies conducted investigating the potentials of the audio mode within literacy and music education. The New London Group (2000) identified general attributes of the audio mode within the contexts of representational, organisational, contextual, social, and ideological meanings, but they did not provide a specific semiotic language that could be used to describe the audio mode in detail. The majority
of multimodal studies have either neglected the audio mode altogether or made brief mention of the audio mode with no elaboration about its impact on meaning-making. Whilst researchers identify the audio mode as being important (van Leeuwen 1999), there is little evidence of implementation of meaning-making activities within a multimodal context within the music classroom.

The literature reveals that, some studies have investigated spoken language (Finch 2012; Kalantzis, Cope & Cloonan 2010; Walsh 2008) with an emphasis on aspects of tone, intonation, pause, pitch, modulation and stress in the voice. Others have attempted to incorporate the audio mode into multimodal compositions in literacy education (Boche & Henning 2015; Cercone 2013; Shanahan 2013), but these demonstrate limited understanding of the elements of the audio mode and lack specific language to describe the audio mode and how it interacts with the other modes, as they do not occur within the music classroom setting.

Literacy educators have managed to include the audio mode in the creation of multimodal texts especially with tasks such as creating podcasts, where sound effects and music were recorded in ‘Garage Band’ to add to the overall meaning, along with the examination of the spoken text (Walsh 2008), creating digital multimodal retellings of a movie where the choice of pre-recorded songs with the visual and linguistic modes combined to contribute to the overall mood, tone and feel of the video (Jocius 2013), and combining song lyrics with other literary works and drawings to create song books (Tanner-Anderson 2009). More recently, studies of multimodal compositions have begun focusing on scaffolding of multimodal processes within schools (Boche & Henning 2015; Courtney & Carleigh 2017; Howell 2018; Smith & Shen 2017). These
Multimodality is beginning to infiltrate music education, with researchers incorporating other modes of meaning along with the audio mode. Social semiotics can be used to identify and describe the ideas and attitudes that music is portraying in a film. As seen outside of music education contexts, Griffith and Machin (2014) reveal the meaning potentials in sound in relation to two spy films. They draw connections between the audio mode and linguistics, identifying the syntax and underlying structure of the music. Whilst generalisations can be made about meanings associated with semiotic resources, they are always ‘in a process of change as they are continually applied to slightly new contexts’ (Griffith & Machin 2014, p.74). Their findings suggest that meaning made through music is complex and that the same music can have different meaning depending upon what is occurring within the other modes. For analysing the meaning potentials of sound in the two themes they examine the direction of pitch movement, pitch range, note articulations, notes, sound qualities, and rhythms. They make generalisations based on the discussions of music by van Leeuwan (1999) to allow the formation of meanings similar to those found in linguistics. When examining the meaning potentials of the audio mode, Machin (2013) utilises a sophisticated semiotic language to describe what is happening within the audio mode. Other studies (Barton & Unsworth 2014; Bateman & Schmidt 2013; Kershaw 1992) have been conducted in the analysis of film music where musical language has been of great benefit in describing the meaning potentials of the audio mode. The use of language that comes from the realm of the musician transfers effectively to describe meaning within the audio mode. Some studies have made recommendations about the types of learning experiences that could develop the skills
in the audio mode pertaining to multimodal literacies, including analysing film scenes with and without sound to foreground the emotional experiences created through the audio, or playing the sound prior to exposing students to the film scene, as well as the remixing of classical songs to incorporate more contemporary sound (Rowsell 2013). Despite these studies about the potentials of the audio mode, there has been limited research conducted on multimodal text creation in music educational contexts.

The recent release of the National Literacy Learning Progressions documents, set to be implemented in Australian schools throughout the year, have mentioned the creation and analysis of multimodal texts. Many references to multimodality in this context have been in relation to enhancing spoken or visual texts with elements of the audio mode and the use of technology. The most prevalent mention of the audio mode is within the ‘speaking’ sub-element whereby references to the relationship between technology, the audio mode and the interrelationship to other modes are briefly attested to in, ‘uses technologies or multimodal features to enhance spoken text (videos a spoken presentation with music, sound effect enhancements)’ (ACARA 2018h). A fundamental limitation of this most contemporary document is that it in no way explores the capabilities of the audio mode as a strength within itself, but rather, attributes it as a means of enhancing other modes. This tokenistic mention of the audio mode within literacy and educational contexts, often means it is negated in terms of research and understanding. Furthermore, in no part of this document is multimodality referenced in terms of the sub-heading of ‘vocabulary’, limiting an exploration of metalanguage pertaining to the audio mode. The imperative that the National Literacy Learning Progressions be implemented in all subject areas, provides an extensive area of opportunity for future Music and The Arts syllabus documents, for educators and researchers to adopt a comprehensive examination of the audio mode. Ideally,
including the capacity of the audio mode to inspire and compliment other modes, the skills and knowledge required to effectively create in and unpack audio elements, and the realisation that it is a mode which can be examined in depth at the forefront of multimodal text creation and meaning-making.

Having reviewed the literature it is clear that, multimodality is appearing in syllabus documents, however, some modes such as the visual are receiving the focus. Studies into the audio mode detail its benefits and intricacies, however, this has not transcended into pedagogical practice. A large reason for this is the lack of detail and acknowledgement of the value of the audio mode within current curriculum documents which recognise multimodality. Syllabus documents also restrict music educators to focus on Art Music and isolated skills rather than encouraging them to contribute to the audio mode within multimodal frameworks. This subjugates music and causes it to remain an isolated discipline. Music education has much to offer in understanding the audio mode within the 21st century multimodal environment as it develops the knowledge, skills and vocabulary to describe the audio mode, and can unpack the layers of sound allowing for deeper study and formulating of connections with meaning-making. While Music education possesses elements of multimodal meaning-making in its delivery, it tends to fail to combine them in such a way to make them relevant to all students rather than only aspiring musicians. The following section of the review will explore the analytical framework of the seven pedagogical affordances (Cope & Kalantzis 2013, 2017) which can be used by educators as a means for incorporating meaningful multimodal practice into the classroom.
2.5 The seven pedagogical affordances making the multimodal personally meaningful

This part of the literature review examines how the seven pedagogical affordances are a useful analytical framework for teachers when incorporating multimodality into their approach. It looks at each affordance and how they benefit pedagogy through a reflexive practice. Despite the rapid and continued advances in technology, pedagogies will not change unless teachers continuously evolve their practice and make it reflexive to accommodate student needs (Cope & Kalantzis 2017). The individual student and their creativity need to be harnessed and cultivated to encourage students to capitalise on their passions, operate in the global environment, and undertake authentic learning experiences (Yelland, Cope & Kalantzis 2008; Zhao 2015). The learning needs of contemporary students are supported by Cope and Kalantzis’s seven pedagogical affordances of contemporary learning: differentiated learning, ubiquitous learning, active knowledge production, multimodal knowledge representations, recursive feedback, collaborative intelligence, and metacognitive reflection (Cope & Kalantzis 2013).

_Differentiated learning_ works with students’ prior knowledge and values their skills whilst offering authentic and meaningful opportunities to build on these experiences and identify targeted learning needs (Cope & Kalantzis 2017). By harnessing the learner’s own voice and self-identity (Cope & Kalantzis 2017), _differentiated learning_ encourages all students to be working in the Zone of Proximal Development (Vygotsky 1978): where they face new challenges by exploring the unknown but not so difficult that it is completely out of their grasp (Morgan 2014). The focus on the one-to-one
relationship with students and careful consideration of the pace of learning instruction is key to successful differentiation (Grant & Basye 2014). Teachers need to be aware of the equilibrium between themselves, students, and the content of the lesson so that they can create an environment that caters for the needs of the individual student (Tomlinson 2014).

The traditional boundaries of time and physical space should no longer be a barrier to education, and students should have the opportunity to engage in multimodal content originating from authentic sources, be immersed in a learning community where everyone has the same goal, and receive feedback on multiple levels from a range of interested parties (Cope & Kalantzis 2013). *Ubiquitous learning* means learning on demand, any time, any place (Cope & Kalantzis 2013, 2017). This has been occurring outside of school to a great extent due to the vast opportunities created by access to new technologies (Orville Vernon Burton, James Onderdonk & Appleford 2009). Classrooms should no longer be seen as restrictive or where all the learning must take place, rather they should encourage students to explore learning opportunities that occur outside of the classroom in real world contexts (Kalantzis & Cope 2009).

With information so readily available through the Internet, it is no longer adequate for learners to be consumers of knowledge but they must be designers of meaning (Cope & Kalantzis 2013). Learning environments need to feature participatory learning where students become co-creators with teachers rather than passive consumers of knowledge (Cope & Kalantzis 2013). Through *active knowledge making* students are able to draw upon the skills and expertise from within their personal life worlds to create meaning by utilizing multiple meaning-making modes (Cope & Kalantzis 2010). This likens itself to the ‘Quilting as a Metaphor for Authorship’ model by
Winters as the students ‘choose, cobbble together, and stitch [as they] engage with others and mediate social relations’ (Winters 2010). Students can combine their understandings drawn from multiple experiences and reinvent them in new ways as they actively produce knowledge within the classroom (Cope & Kalantzis 2010).

The seven pedagogical affordances promote *multimodal meaning* through the use of technology (Cope & Kalantzis 2013). Whilst multimodal content is prolific within society, technology has made creating and exploring multimodal meaning more accessible (Cope & Kalantzis 2017). The various modes functionally depend on each other and form a grammatical structure and unity (Cope & Kalantzis 2015). By utilising technology in the composition process, students can synthesise the visual and aural modes and use sequencing programs such as Cubase to display film on the screen along with recording audio (Gall & Breeze 2005). Gall and Breeze (2005) recognised that despite the acknowledgement of the audio mode as an important multimodal element, the literature has yet to explore in detail the semiotic potential available through musical creation.

As the needs of students are becoming more diverse, the necessity for *recursive feedback* to encourage learning is essential in maintaining productive environments for all students. Formative assessment allows students to reflect on prior knowledge, identify gaps, and generates motivation for learning (Moss & Brookhart 2009). A separation has been discovered between retrospective feedback and feedback in the moment (Cope & Kalantzis 2013). Studies suggest that feedback is more effective when it is interactive between teacher and student rather than summative, as the dialogue allows for deeper learning to occur (Nicol 2010). *Recursive feedback* allows for both student and teacher to be aware of how they are progressing with a learning
activity and to make necessary adjustments to enhance the experience for the learner (Cornelius 2014).

As the balance of learner agency shifts more towards the learner and away from the teacher, the idea of passive knowledge consumption is disappearing with students now having the technological capabilities to interact vicariously by leaving comments, selecting camera angles and creating their own narratives in the digital environment (Kalantzis & Cope 2009). With the ease of communication via the Internet, contemporary learners readily participate in collaborative environments outside of school contexts. The removal of the teacher as source of all knowledge creates an environment where students are able to learn through scaffolded tasks with teacher and peer feedback, receive continuous formative assessment, publish completed works for the whole class as the positioned community of practice, and engage simultaneously in enhancing metalanguage (Cope & Kalantzis 2013). This changes the role of the teacher within the classroom to one that ‘exhibits the quality of improvisation’ (Alsup 2006, p. 182). The ability to adapt and respond to the learning situation involves being aware of the intricacies within the classroom environment and having the skillset to meet the needs of students with learning challenges appropriate to engage them (Alsup 2006). Improvisation in the classroom exposes the teacher to a certain level of risk and requires that they have the skills and knowledge to adapt to the individual learning situation. This agentive shift from teacher to student allows for learning to occur through collaborative intelligence.

Whilst formative assessment shows students an understanding of their work as seen by others, metacognitive reflection, encourages students to deconstruct their own thought processes and refine them (Moss & Brookhart 2009). As students learn to
unlock their methods of self-corrective thinking it allows for a greater scope of application and transfer for ideas and understandings (Cope & Kalantzis 2017). Metacognition requires students to ask themselves questions about why they have chosen to do something in a particular way. As students design meanings using new technologies and multimodal representations, they are asked to undertake higher-order conceptualisations of their skills and processes, while evaluating the reliability of an array of digital information (Cope & Kalantzis 2010; Gee & Hayes 2011).

By examining the seven pedagogical affordances it is clear that multiple factors are required to be considered and implemented within meaningful pedagogical moves. Teachers who wish to move students to new learning paradigms through multimodal frameworks need to relinquish the one-size-fits-all model and accept the contextually variable nature of the learning space and individual.

2.6 Chapter summary

This chapter explored the changing identities and needs of contemporary learners as they interact with the technological tools of the 21st century. It examined the rise of multimodality due to its accessibility through technological means. It defined the key terms of multimodality, texts, and literacy. The capacities of the audio mode were unpacked within the literature and an evident area of opportunity exists in the research relating to pedagogies for the teaching of the audio mode pertaining to multimodality within music educational contexts. The literature also foregrounded additional insights
into the changing nature of music consumption and creation, whereby, individuals no longer require formal tuition to compose music. The review explored the large degree to which all individuals are immersed in sound and music, suggesting the applicability of studying the audio mode within school contexts. The chapter also compared the out-of-school and within-school music experiences and interactions of students, and demonstrated the value of drawing on experiences beyond the classroom to engage student interest in learning. The literature pertaining to the syllabus and curriculum documents indicated that music still remains a highly isolated discipline, and that there is an absence of a close examination of the value of the audio mode within multimodal outcomes. This presents opportunities for music educators and experts in multimodality to harness the audio mode as a way of accessing and enriching understanding of the other modes. Finally, the seven pedagogical affordances present a highly valuable framework for ensuring that pedagogies are appropriate for teaching in the multimodal communications environment. These affordances highlight the power of reflexive teaching and how a pedagogical shift which embraces multimodality can be successfully implemented and evaluated.
3. Research Methodology

3.1 Introduction

The previous chapters have introduced the research and positioned it within the relevant literature, including impressions of how contemporary multimodal pedagogies are currently utilised in schools. This chapter provides a detailed explanation of the methodology appropriate to the research questions and the aims of the study. It introduces the research then discusses the design and the context of the research. The chapter then introduces the MEMTU and the PMP, outlines the data collection methods, and discusses the data analysis process appropriate to answering the research questions. Finally, the chapter explores the research procedures and timelines, issues within case studies, and ethical challenges and how these were addressed.

The methodology is guided by the aims of the research to explore how contemporary multimodal pedagogies can enable students’ meaning-making capacities in a music education context.

The overarching research question addressed in this study is:

How can contemporary multimodal pedagogies in music education enable students’ meaning-making capacities?

Supporting sub-questions investigated are:

1. How can contemporary multimodal pedagogies be enacted in music education?
2. How are students’ multimodal meaning-making capacities enabled by contemporary multimodal pedagogies in music education?

3.2 Research Design – A Qualitative Case Study

This research is a case study of practitioner research into enactment of contemporary multimodal pedagogies in music education and enablement of students’ meaning making capacities. In identifying the boundaries of the case (Merriam 2014; Simons 2009) this case study pertained to how I, as teacher, enacted contemporary multimodal pedagogies with one Year 10 Music elective class over an 11-week period. It extended to include the actions, interactions, perspectives and work completed by the 16 female students in the Music elective class inside and outside the classroom; specifically, the actions and interactions that enabled the creation of the student personal multimodal presentations. Of the 16, three students were chosen as the focus of the data to be analysed and their process and final product were explored in detail.

The case study sought to discover the perspectives of not only I, the teacher, but those of the student participants (Simons 2009), allowing the emergence of previously unknown relationships and variables (Stake 1995). Whilst this case explored the pedagogies deployed in the Music elective class by me, it also captured the complex actions, perceptions and interpretations occurring within the Music elective class (Merriam 2014).

Teacher – practitioner researchers often use case studies to explore their pedagogies as this provides deep insights into the problems and questions that are faced at the classroom level and can facilitate a change in practice (Merriam & Tisdell 2016). This design is optimal when examining this class as it is descriptive, facilitating the development of personal understandings sensitive to the context and subjective worlds within this case (Allen 2004). Qualitative research fits well within educational contexts.
such as the Music elective as it is a complex site composed of ‘layers of meanings, interpretations, values and attitudes’ (Hitchcock & Hughes 1995, p. 26). Prior to further explanation, it is pertinent to examine an understanding of the characteristics and functions of a case study.

Historically, a case study is an approach to research fed by a range of theoretical methods that come from social, criminal and medical science (Stark & Torrence 2007). The case study methodology affords the researcher the opportunity to conduct an in-depth study with participants, and identify and describe before analysing and theorizing (Stark & Torrence 2007). It allows for the investigation of ‘contemporary phenomenon within its real-life context’ in situations where context is highly pertinent to the study (Yin 2003, p. 13). Case studies examine changes occurring from a participant’s perspective (Stark & Torrence 2007) and from the perspective of an observer (Gerring 2004). This case study examines qualitative features of the ‘self’ and my pedagogical implementation as I, the teacher-researcher, and teacher – musician am ‘an inescapable part of the situation’ being studied (Simons 2009, p.81).

The features of this study include exploring participant perspectives through the purposeful design (Cochran-Smith & Donnell 2006) of a new pedagogical model (see details in Section 3.5 and Chapter Four). Secondly, the analysis of multiple data sources including profile surveys, video and audio recordings, collection of student artefacts and teacher reflections as well as the collaborative interactions between teacher researcher and students. The final feature of this study involved reflection which catalysed a shift in the teacher’s pedagogical practice, having discovered strategies for improvement (Merriam & Tisdell 2016).
The variables within the case study include the sharing of teacher and student personal interests when engaging with the pedagogy deployed, collaborative insights related to audio metalanguage and the acquisition of technological skills. Collaboration between myself and the participants is a seminal feature of the research, as it allows the development of audio metalanguage, effective questioning techniques, shared understandings of the context of student interests and influences, as well as, the improvement of musical skills.

Practitioner inquiry ‘enable[s] teachers to explore the underlying assumptions, biases, values, and ideologies that are inherent in their curriculum and pedagogies’ (Pappas & Tucker-Raymond 2011, p. 3). By using this method, I was able to investigate the knowledge embedded in my teaching decisions in the classroom and beyond (Cochran-Smith & Lytle 1999). As a teacher undertaking practitioner inquiry, I was not only ‘perfecting the practical execution of a set of teaching strategies but, rather, theorizing about teaching and learning in a way that then frame future interpretation and decision-making’ (Whitney et al. 2008, p. 205). Throughout the duration of the case study, teacher – practitioner research encouraged me to operate in an environment where my questions were continuously reformulated, methods were revised, and analysis was ongoing (Cochran-Smith & Lytle 1993).

In sum, teacher – practitioner research in this case study provides parameters for the collection and analysis of data while also allowing for flexibility in the process (Creswell 2014). This method also enables me to assess the scope and effectiveness of the new pedagogical model created for the purpose of answering the research questions within this study, which is further elaborated on in Chapter Four.
3.3 Research context

3.3.1 Site

The research was conducted in a medium-size independent girls’ school located in the state of New South Wales, Australia. The school caters for Kindergarten to Year 12 girls, with enrolments of approximately 1300 students. The school is situated in an area where much of the population is classed as affluent with a school ICSEA value of above 1150 (ACARA 2018e). The school’s mission indicates that it is committed to providing excellence in education and the fulfilment of each child’s potential by fostering academic, cultural, physical and spiritual development. The school community has invested in a specialist music technology laboratory, which is very well equipped with recently produced software and hardware. The school offers opportunities for participation in a broad range of music ensembles as extra-curricular activities outside of normal class time.

My role at the time of the data collection, was Coordinator of Music Curriculum for Years 7-12 (students aged approximately 12-18). This role included overseeing the implementation of Music programs that satisfy the syllabus requirements (as set by the New South Wales Board of Studies); the integration of technology into the music curriculum; teaching a range of mandatory and elective music classes; directing ensembles in the schools’ extra-curricular music program; mentoring staff; and membership of the Teaching and Learning committee devoted to the delivery of all aspects of the girls’ education.

I had commenced working at the school three years prior to the data collection and had witnessed the use of music technology as a replacement for writing musical scores by
hand, using the programme ‘Sibelius’, (a music notation software). Whilst this afforded students the opportunity to create an electronic score and undertake some experimentation with their composition work, it also confined them to the use of standard musical notation. This is becoming a commonplace occurrence in secondary schools’ music education, whereby access to technology becomes available without knowledge and training in ways to best utilise it in the classroom.

As a musician, teacher and researcher my background includes a personal interest in the use of music technology in classroom programs, in particular, the creation of music for film through the use of technology. Within my three years working at the school I had implemented music composition lessons without focussing on music notation, such as in my Master of Education research project, ‘Playful learning and new music technologies in girls’ education’. This project involved an alternative approach to composition by using the visual mode as a stimulus for audio creation. Students were engaged in the creation of soundtracks for cartoon stimulus and data was analysed using a dimensions of multimodal meaning framework (Cope & Kalantzis 2000b). This Master of Education project inspired my deeper investigations into multimodal pedagogies in the Music elective.

The technology available at the site included the following setup for each student:

- a PC computer
- a midi keyboard
- an audio interface
- headphones
- access to the Internet
• access to microphones
• access to Cubase (a midi and audio sequencing software package), Windows Movie Maker, Pinnacle Studio (a more detailed video editing package), Xtranormal (a web based narrative programme that featured a variety of characters and voices). (See details in Chapter Four).

3.3.2 Participants

The participants in this case study included a class of 16 females aged 14-16 years and myself, a male teacher-researcher (32 years of age at the time of the data collection). Three students selected for intensive focus in the case study, introduced in Chapters Five, Six and Seven, represent the elective class population with their varied musical backgrounds of popular and classical training, interests, and technological skillsets. Primarily, the process for the selection of these three students occurred during the data collection where it was evident that their approaches, skillsets, and variance of their musical and personal contexts meant that they collectively epitomised the diversity within the Music elective. Galaxy Girl, introduced in Chapter Five, was first to complete the preliminary elements of the project and with whom many adjustments to the pedagogical practice were initially trialled.

The Year 10 Music elective included girls who had chosen to study Music from a large offering of elective subjects. We had completed two units of elective work together earlier in the year, prior to undertaking the research. The students had studied four Music elective topics in Year 9 with another teacher. The students had varying formal musical skill levels. These ranged from music scholarship students, who had many
years of experience playing instruments, a high level of theoretical knowledge, and were trained in the classical style. As well as, students who were less experienced in playing a musical instrument, had little theoretical knowledge of music, and preferred popular music styles.

3.3.3 Music elective context

As a teacher of elective Music courses in Stage five (Years 9-10) in New South Wales, it is a challenge to cater to all students’ interests whilst complying with the mandatory requirements imposed by the current Board of Studies Music syllabus (Board of Studies 2003). The compulsory studies of two topics from Western Art Music, such as Medieval, Renaissance, Baroque, Classical, 19th century, or 20th century Art Music, throughout the two-year course were seen as irrelevant by many students undertaking the course. Students must also study music from two topics other than Art Music such as rock, popular, jazz, theatre music, music and technology, music of a culture, music for radio, film and television, and music for small or large ensemble. Whilst these requirements may appear to provide students with a well-rounded music education, they do not factor that the enrolment numbers for New South Wales Stage Six Music courses strongly favour the course that caters to more contemporary students with 4824 enrolments in comparison to 750 in the Art Music predominated course in 2017 (NESA 2017). Whilst there are no figures to accurately account for the number of students with popular versus Art Music preferences in Stage Five, one would assume that there is still an inclination towards popular music.

The Stage Five Music syllabus presumes that students will benefit from completing composition tasks that focus on styles of music from the canon of Western Art Music.
However, many students are not familiar with texts within the musical canon and interact with these on a very limited basis, mostly at school. The majority of work undertaken in the classroom in these topic areas involves score reading and notation of musical ideas, whether traditional or non-traditional notation (Guderian 2012). These predominantly utilise traditional pedagogies for learning to play an instrument where students learn to read traditional notation and undertake lessons in music theory and harmony. Such pedagogies do not apply to many contemporary musicians, who are less likely to be able to read traditional music notation or have the same knowledge of music theory and harmony that a student of a traditional instrument would acquire. The study of music topics from the musical canon immediately disadvantages students who come from contemporary learning backgrounds and creates a disconnect between learning styles.

Following is a summary of a task in an Art Music topic that I have used in my teaching in the past, taken from a Stage Five elective music programme on Classical Music –

Students study several pieces of Music, such as ‘Eine Kleine Nachtmusik’ and ‘12 Variations on "Ah, vous dirai-je maman", (Twinkle Twinkle Little Star)’ by Mozart. The aim of the task is for students to create their own composition based on the stylistic understanding they have gained from these two pieces. The students are provided with a new musical theme and then required to use Mozart’s examples of variations to treat the theme in several different ways. Students ultimately create three musical variations of this theme within a composition. Students either complete this task with pen and manuscript paper or utilise Sibelius or Finale (notation software) to create a musical score, which represents the Classical period of music (School 2011).
This task, whilst representative of a typical Stage Five Music composition task, only affords students the opportunity to work with music examples selected by the teacher and within the genre of Classical Music. By using solo piano repertoire, it restricts students to working with a narrow portion of music repertoire. Whilst the task satisfies the criteria of the New South Wales Board of Studies Year 7-10 Music Syllabus (2003) and includes the use of technology in the composition process, it does not allow students to explore their musical interests, utilise skills and experiences from outside of the classroom and their social contexts, and limits the student to the audio mode. This task encourages modelling a composition based upon renowned examples so that students can become familiar with the genre of classical music. It does not require students to go beyond copying melodic ideas and accompaniment patterns, structures, chord progressions, and expressive devices to make them relevant to their own musical experiences. As it is formulaic, the task can be completed with little consideration and awareness for the classical period of music. By focusing on music compositions led by notation, rather than how the piece actually sounds, students do not experience the authentic experience of a composer. Ironically, Mozart composed music by ear, meaning students are even further removed from experiencing the authentic compositional process (Agnew 1922). Contemporary composers play with sounds, add in beats, rhythms, improvisations, references and associations, and remix ideas (Rowsell 2013).

In this study, I took the position that authentic music compositional experiences must move beyond following the rules created to describe what composers did in the past. They should embrace the advantages of tools of the 21st century that allow easy access to experimentation with sound and meaningful creation within the audio mode. My challenge when designing this research project was to enable students to explore in the
audio mode by incorporating music that was interesting and relevant to them. I also aimed to encourage students to draw upon their own personal interests by including modes other than the audio into the meaning-making process. I brought students’ personal interests and outside of classroom influences to meaningfully engage them with the multimodal elements of composition, analysis and reflection.

3.4 The Music Elective Multimodal Technology Unit (MEMTU)

The Music Elective Multimodal Technology Unit (MEMTU) was an 11-week unit designed by the teacher-researcher for a Year 10 elective music class of 16 students. It comprised of a lesson sequence which moved from teacher-centred learning experiences to student-driven analysis and composition. The MEMTU differed from prior units of work in the elective through its focus on the multimodal elements of composition, exploring the connection of the audio, visual and linguistic modes throughout. Additionally, student interests were foregrounded as the main content of the unit, promoting high levels of student engagement through choice of content and relevance. Within the MEMTU students were able to create in the music technology laboratory and beyond the classroom. This enabled students to experiment with new software, use familiar influences and instruments, and consider how technology can be used to make meaning across the modes. Appendix B shows the lesson sequence for the entirety of the MEMTU. The MEMTU is explored in detail in Chapter Four.

3.5 The Personal Multimodal Presentation (PMP)

The elective focussed on the creation of a Personal Multimodal Presentation (PMP). A PMP, as referred to in this thesis, is an expression of self through the combination
of the audio, visual and linguistic modes, presented in the form of a three to four-minute video. It was designed to allow students to create a narrative that was drawn from an area of personal interest from outside of school. It sought to provide the opportunity to analyse familiar audio material which may not have been examined in detail before. Students reassembled the elements of the audio mode in selected pieces so that they effectively interacted with visual and linguistic material, culminating in a completed PMP. The creator was positioned to delve deeply into their interests, draw upon personal influences, and make meaning in the form of a video.

The design parameters of the PMP as given to students can be seen in Appendix D. These expectations were devised to position students to pay specific attention to working in the audio, visual and linguistic modes rather than just working in the audio mode, as is usual in Music education. These parameters also encouraged students to draw upon personal influences and incorporate music from different genres to accompany scenes within their PMP.

3.6 Data collection methods

The previous sections described the research aims, research questions, methodological framework, site and the participants of the case study and the parameters for development of students’ PMPs. In this section the qualitative data collection methods implemented in this case study will be discussed along with the rationale behind their inclusion in the study.

Data collected in research must be useful in responding to the research questions and be in a format that assists the researcher in informing the audience of the results of the
study (Yates 2004). ‘A key feature of [this] theory-building case research is the freedom to make adjustments during the data collection process’ (Eisenhardt 1989, p. 539). Multiple data collection methods were implemented in this study to give a rich account (Yin 2003) and to provide a better understanding of the subject matter (Denzin 2009). In this case study, data collection focused on the potential of music education to enhance the understanding of the audio mode within multimodal literacy, and how using multimodal texts in the Music elective can enhance the development of music skills. This interrelationship between pedagogy and multimodal literacy was initially explored through data that captured the interaction between the teacher – researcher and participants, student engagement with the modes within multimodal meaning-making, as well as the development of audio metalanguage. In addition, as the study progressed, the seven pedagogical affordances became the prominent analytical tool that explored the relationship between student influences, the interaction of the modes, and the use of contemporary multimodal pedagogies throughout the MEMTU. This study encompasses many decisions made by the researcher, whose background and values have been clearly outlined in Section 3.1, and Chapter Four. The data collection which encompassed data from the teacher – researcher, pedagogical developments, student work and interactions, student musical skills, collaborative conversations between the teacher and students, formative reflections on the process, technological skill development and the final product and reflections, captures the intricate details of the MEMTU pedagogy. The variety of data collection methods allowed me as a researcher to trace snapshots in time of the data and how they changed throughout the duration of the study (Jewitt 2008).

The following data collection methods were used to address the research questions:

1. Profile survey of students’ music-technology
2. Videoing of students’ screens
3. Audio recording of learning conversations between teacher and students at computers
4. Audio recording of lesson snippets
5. Collection of student artefact – portfolios
6. Collection of student artefact – staged PMP on Cubase
7. Keeping a teacher researcher journal

Table 3.1, below, presents a summary of the data collection methods; the time frame for the collection of each data type; and the form of data, used throughout this study.

Table 3.1: Data Collection Summary

<table>
<thead>
<tr>
<th>Data collection methods</th>
<th>Time in the 11-week unit of work</th>
<th>Form of data</th>
<th>Purpose of data collection method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Profile survey of students’ music-technology</td>
<td>Week 1</td>
<td>Hard copy documents</td>
<td>To obtain background information about the students’ musical, technological and multimodal experiences.</td>
</tr>
<tr>
<td>2. Videoing of students’ screens</td>
<td>Week 3, 5, 7, 9 and 11.</td>
<td>A video recording of students’ computer screens during lessons. Students’ conversations were also captured.</td>
<td>To obtain a record of the students’ process on the computer and connect learning conversations to visual elements.</td>
</tr>
<tr>
<td>3. Audio recording of conversations - interactions between teacher and students at computers</td>
<td>Ongoing throughout the unit</td>
<td>Audio recordings of conversations between teacher and students at their computers.</td>
<td>To obtain an exact record of the learning conversations that occurred, when not videoing.</td>
</tr>
<tr>
<td>4. Audio recording of lesson snippets</td>
<td>Ongoing throughout the unit</td>
<td>Audio recordings of class discussion</td>
<td>To obtain an exact record of the classroom discussion.</td>
</tr>
<tr>
<td>5. Collection of student artefacts - portfolios</td>
<td>Ongoing and at the conclusion of the study</td>
<td>Hard copy document of the composition portfolio.</td>
<td>To gain students’ descriptions of the</td>
</tr>
<tr>
<td><strong>6. Collection of student artefacts – staged PMP on Cubase</strong></td>
<td>Ongoing and at the conclusion of the study</td>
<td>Cubase computer files saved after each lesson</td>
<td>To have an accurate record of the processes whilst creating PMP.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>7. Keeping a teacher researcher journal</strong></td>
<td>Ongoing throughout study</td>
<td>Hard copy teacher reflective journal.</td>
<td>To obtain descriptions of the events in the classroom shortly after they occurred.</td>
</tr>
</tbody>
</table>
3.6.1 Profile survey of students’ music-technology

The profile survey of students’ music-technology was used to collect numerical data, facts, and opinions without requiring the researcher to be present (Cohen, Manion & Morrison 2007). Students were given a written survey to complete regarding their background and relationship with music, music technology and multimodal experiences (see Appendix C). The students’ responses to the survey informed description about each student’s background offering specific details of their previous involvements with music, music technology and multimodal experiences.

3.6.2 Videoing of students’ screens

The use of a video camera to record each student’s computer screen, for one lesson per week, helped to reduce bias by the researcher which is the main criticism of participant observations (Bell 2010). The filming captured the students’ computer monitor only (not the students themselves) and the conversations that occurred between the students and other students, and students and teacher, when creating their PMPs. Video recordings aided in demonstrating the process undertaken by students within the music lesson, showcasing their emotions, in the moment reactions, and enthusiasm towards their compositions. The video recorded the learning conversations that occurred between the students, their peers and teacher-researcher, providing a multimodal representation of what occurred within the lesson. Gauntlett (2004) states:

Pictures obviously offer us the opportunity to reveal ‘everything in one go’, without the material being forced into an order or a hierarchy. Often it is useful to have some explanation in words, after the initial (and central) impact of the imagery; but the primacy of the image can be retained (p. 13).
In agreement with the above statement, the video recordings enabled a deeper understanding of student engagement with the project. They conveyed student attitudes towards the process, the pace at which they worked, and provided a continual reference point for comparing their reflections and how they arrived at pertinent points within the stages of the PMPs.

Data on how students were making meaning using audio were gained directly from the video. Discussions about the content on the screens were useful in uncovering the relationships between the different modes. The learning conversations helped to unearth the reflective process in the students’ work by prompting for descriptions, explanations and evaluations (Robinson & Lai 2006).

3.6.3 Audio recording of learning conversations between teacher and students at computers

Audio recorded learning conversations between teacher and students at computers occurred as a way of maintaining an accurate record of the interactions that occurred throughout the study (Chandler, Anstey & Ross 2015). The recordings were transcribed and provided an accurate record of the interactions at an individual level as the student and teacher engaged in the learning conversations about the PMP. The learning conversations and interactions often required me to adapt quickly to student ideas and adjust my preconceived assumptions so that follow-up questions were appropriate for student progression. The audio recordings and transcriptions of the learning conversations assisted with capturing the experiences, as following rapid adjustments to pedagogical approaches in-the-moment, it would be otherwise difficult to retain.
3.6.4 Audio recording of lesson snippets

One area where a clear adjustment to data collection processes was made is the audio recording of lesson snippets. Similar to the audio recordings at computers, these transcribed recordings provided an account of the conversations had between the students and teacher in the segments of the lesson that involved the entire class. This addition to the data collection occurred following teacher reflection after Lesson Three. Akin to the conversations at computers, these discussions promoted the accuracy of the study as they maintained a record of lesson proceedings and interactions. These transcriptions and recordings provided a base for content to analyse when examining teacher questions, modelled examples and also student responses and ideas in a class setting.

3.6.5 Collection of student artefacts – portfolios

The composition portfolio provided an insight into the students’ thinking and how meaning-making occurred throughout the unit of work. In their composition portfolios, students reflected on the process of what they created and why they made compositional choices. The composition portfolios were an important tool for encouraging reflection as they created the opportunity for students to document their thinking processes (Loughran 1999). The composition portfolios were viewed throughout the unit of work, as part of the ordinary teaching of the class, reflecting staged multimodal analysis practices (Jewitt, Bezemer & O'Halloran 2016). Examining documents, such as student composition portfolios, allowed the researcher to develop a precise understanding of the composition process over a long period of time (Yin 2003). The composition portfolios allowed the researcher the opportunity to
focus on the decision-making process of the students and how meaning-making occurred. These documents ‘serve as substitutes for records of activity that [I]…could not observe directly’ (Stake 1995, p. 68). They were paramount in understanding the thought processes undertaken by students and provided significant insight into the development of skills and ideas pertaining to audio choices and their interactions with other modes when creating multimodal meaning. The composition portfolios were repeatedly re-examined to ensure that memories of experiences were precise and that student voices were portrayed in an accurate and authentic manner as discussed in Chapters Five, Six and Seven.

3.6.6 Collection of student artefact – staged PMP on Cubase

Staged versions of the students’ Cubase work were collected. This allowed the researcher to record the work that the student had completed each lesson and track the development of the audio mode to accompany the visual and linguistic modes in their PMP. These staged versions add richness to the student composition portfolios by demonstrating the written discussion in a multimodal way. This was a means of digital organisation which ensured student work was reliably saved, progress was documented, and evidence of progression was rewarded. These staged versions of student work are referred to in Chapters Five, Six and Seven demonstrating the student progress and process undertaken.

3.6.7 Keeping a teacher researcher journal

As the teacher-researcher, I observed each lesson within MEMTU and recorded details in my research journal immediately after each lesson. I then reflected upon these observations and made further notes in my research journal which were useful in the
data reduction process. My role as teacher-researcher included being an ‘interpreter in the field to observe the workings of the case, one who records objectively what is happening but simultaneously examines its meaning and redirects observation to refine or substantiate those meanings’ (Stake 1995, p. 8). Participant-observations create the ‘ability to perceive reality from the viewpoint of someone ‘inside’ the case study rather than external to it’ (Yin 2003, p. 94). Stake (1995) suggests that ‘thick description, experiential understanding, and multiple realities are expected in qualitative case studies’ (p. 43). Throughout the MEMTU I acted as a collaborator with the students in creating their PMPs and the researcher journal allowed me to keep my first-hand experiences recorded in a logical manner.

3.7 Data analysis

This study generated a range of data from numerous sources. Since, ‘one cannot ordinarily follow how a researcher got from 3600 pages of field notes to the final conclusions, sprinkled with vivid quotes’ (Miles & Huberman 1984, p. 16), protocols were developed to make the data manageable, identify patterns and to allow the research questions to be investigated. Miles and Huberman (1994) identified three broad stages within the data analysis process: reduction; displays; and conclusion drawing and verification. This section will refer to the protocols within each of the three stages.

The reduction process involved several different steps. Firstly, the transcripts and portfolios were examined and examples of the seven pedagogical affordances were highlighted with reflective comments made as appropriate. This task proved difficult for some of the affordances, as they were evident throughout much of the MEMTU
and hard to isolate. *Multimodal meaning* was the affordance at the fore throughout the MEMTU, as this unit was designed with the creation of a multimodal text as the focus. For this affordance, I examined and identified key words and phrases within the audio, visual and linguistic modes and then studied how they interacted together within the transcripts and portfolios. The affordances of *differentiation*, *recursive feedback* and *collaborative intelligence* were also consistently seen throughout much of the MEMTU due to the individual nature of the PMP and the interactions between student and teacher. Examples were selected for analysis and discussion in Chapters Five, Six and Seven. Throughout the reduction process I selected three students with contrasting musical backgrounds, interests and methods of PMP construction to discuss their process and interaction with the PMP in detail. The two phases of the MEMTU, including the teacher process and then the student process, were analysed to gain an understanding of how the pedagogical moves impact upon student learning outcomes within multimodal meaning-making. I observed the multimodal composition process of the selected students in a chronological order to examine the pedagogical moves which I had made and their impact within the MEMTU and prepared a description of what the three girls completed each lesson and outside of class. The reduction process allowed the large data set to be organised so as to address the research questions.

The information gathered through data reduction was organised into several displays (see Appendices G, H, I). Appendix G *Display of lessons and seven pedagogical affordances* outlines which of the seven pedagogical affordances were evident in each lesson. Appendix H *Display of selected students’ relevant transcripts and multimodality (audio, visual, linguistic)*, which demonstrated a strong multimodal focus, shows the way in which the excerpts from the selected students were collated and considered using multimodal elements. Appendix H enabled the comparison and
contrast of the selected students’ privileging and utilisation of each mode as they constructed their PMP. Appendix I *Display of selected students’ relevant transcripts and the seven pedagogical affordances* shows how excerpts from the selected students were collated and connected to the seven pedagogical affordances. Whilst these displays allowed the relevant data to be brought together for analysis using the seven pedagogical affordances as an analytical tool, because the seven pedagogical affordances were prevalent throughout the MEMTU, pertinent instances were selected for inclusion into the data analysis chapters. The intricacies within the pedagogies were best explained through discussion of specific examples provided from the case study.

The conclusion drawing and verification of the data analysis stage can be seen in Chapters Four, Five, Six, Seven and Eight. The seven pedagogical affordances (Cope & Kalantzis 2013) were used as an analytical tool to target the pedagogical strategies and occurrences present within the MEMTU. They were chosen as an analytical tool as the philosophy underpinning the seven pedagogical affordances aligned with the pedagogical framework of the MEMTU. Chapter Four examines the MEMTU and the pedagogical moves made by the teacher using the seven pedagogical affordances. It looks at the planning prior to the implementation of the unit, and the two phases of the MEMTU with a focus on the pedagogies and the strategies employed by the teacher. Chapter Five, Six and Seven expand on the pedagogies in Chapter Four. They follow the interactions of the three selected students with the pedagogies and explore how the seven pedagogical affordances can be utilised within the Music elective. These three chapters focus on Phase Two of the MEMTU. Chapter Eight presents the concluding discussion about the MEMTU summating how the seven pedagogical affordances were activated by the teacher pedagogies and the creation of the PMP. This chapter also presents the findings and recommendations and draws conclusions by answering
the research questions. It draws attention to the power of the audio mode within multimodal compositions and validates the inclusion of the audio mode into the multimodal curriculum as a purposeful and complex element for meaning-making.

3.8 Research Procedures and Timelines

The research project was conducted through three different stages: planning, teacher creating, and implementation. Each of the stages is outlined in Table 3.2 below.

Table 3.2. Research procedures and timeline

<table>
<thead>
<tr>
<th>Stages</th>
<th>Timeline</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>September 2011 – June 2012</td>
<td>Contacted the school to gain approval to use the research site, planned the unit of work, designed the PMP</td>
</tr>
<tr>
<td>Teacher creating</td>
<td>May – June 2012</td>
<td>Created my own version of the PMP</td>
</tr>
<tr>
<td>Implementation</td>
<td>19 June – 21 September 2012</td>
<td>Collected data through the delivery of the MEMTU to Year 10 elective music class.</td>
</tr>
</tbody>
</table>

3.8.1 Stage 1: Planning

This initial stage was conducted in preparation for my colloquium. I was able to draw upon my experiences at the research site and plan to utilise the resources available in the new music technology laboratory. Having discovered an opportunity to contribute to the literature and research pertaining to the audio mode within multimodal pedagogical approaches, I designed the MEMTU as a means for directly targeting this space with the intention of meaningfully contributing to multimodal pedagogical
research. I intentionally planned to create a unit that focused on student personal interest within the Music elective as this was also a gap in music education.

3.8.2 Stage 2: Teacher creating

Over a six-week period, I planned out my PMP. This involved finding a topic that I was personally invested in and then completing all of the steps in the process that the students would complete (see Chapter Four). The unit was designed to ensure that I modelled an example of the PMP prior to students creating their own. It also provided insight into some of the technological hurdles students may face and allowed me to pre-empt some of the questions students would ask.

3.8.3 Stage 3: Implementation

This stage occurred from 19 June – 21 September 2012 as outlined in Appendix F and discussed below.

Appendix F outlines the planned structure of the individual lessons within the MEMTU giving a description of the content of the lessons and the data collection methods utilised. This table depicts the planned focus content to be delivered in each lesson, giving a lesson-by-lesson run down of the work planned throughout the MEMTU and the data collection methods that would be used in each lesson.

3.9 Issues in a case study of practitioner research
Single-case studies are vulnerable because the researcher is relying on all of their data to come from one situation (Yin 2003). Due to the empathetic nature of interpretive research paradigm there is much room for observer subjectivity and it cannot be viewed as free of bias (Blanche & Durrheim 1999; Stake 1995). To address this issue, multiple sources of evidence allowed for the consideration of the experiences of 16 students and me as teacher-researcher. By bringing together multiple data sets, including student music-technology profiles, video observations, audio recorded learning conversations and interactions, audio recorded lesson snippets, student artefacts and the teacher researcher journal, I attempted to represent the case study in a balanced manner (Allen 2004; Cohen, Manion & Morrison 2007; Stake 2010). The research is subjective but this is an ‘essential element of understanding human activity’ (Stake 2010, p. 210). The participants in this study bring their own personal bias as they reflect and interpret events in the construction of reality as it exists in the classroom (Stake 2010). The strength of this case study is that it represents a pedagogical framework and its function within a classroom context. Future studies could explore the MEMTU and its outcomes across multiple classes in different school contexts.

3.10 Ethical challenges

Qualitative research generates ethical considerations because of the detailed study of people and their environments (Hitchcock & Hughes 1995). As teacher-researcher, I had a responsibility to preserve the trust of the participants gained in investigating their thoughts, opinions, reactions and ideas (Oliver 2010). I was acutely aware of the power differentials between the teacher and students in this research and removed summative
assessment and numerical grading to eliminate extrinsic motivators which stem from this dynamic. In social research the dangers are mental rather than physical, including, ‘the dangers of exposure, humiliation, embarrassment, loss of respect and self-respect, [and] loss of standing…in a group’ (Stake 2010, p. 206). These dangers can affect the participants and the outcome of the study unless they are carefully considered and addressed (Cohen, Manion & Morrison 2007). I felt I was in a strong position to authentically represent the students having completed a sample PMP of my own, as I was privy to the vulnerabilities and potential challenges students would face musically, technologically, multi-modally and emotionally when sharing their progress and work. The creation of a PMP encouraged students to draw upon their own experiences but in order to minimise embarrassment, personal exposure and humiliation, the students did not include their faces in their PMP. In the classroom a positive learning and inclusive learning environment was encouraged at all times allowing students to share their progress, peer assess, and self-reflect in a constructive and caring atmosphere.

Students were encouraged to use voices other than their own for any narration in their PMP (either use a friend or computer-generated voices). This was to minimise re-identification by viewers of the PMP from outside of the group. Student names were converted to pseudonyms and place names were fictitious to ensure privacy and integrity was maintained. These names in no way identified any private information about students but rather pay homage to the themes explored in their PMP (Menter 2011). Of further note, these pseudonyms were student selected and teacher approved. However, some locations such as Sydney Harbour, are visible within student PMPs but these in no way to identify the students involved.
Since the case study encompassed the collection of information from students at a school, approval to conduct the study was sought and received from the Deakin University Human Ethics Committee using the National Ethics Application Form. The Year Coordinator was recruited to act as an intermediary should the girls have experienced any problems throughout the project. Each potential participant received a Plain Language Statement explaining the aim and conduct of the case study; details of the data collection methods; their withdrawal options; and the contact details of the researcher and researcher’s supervisor and the Year Coordinator to clarify any concerns throughout the study.

Free and informed consent was sought from the school principal, the students and their parents (Robinson & Lai 2006). The data collected in this project was work undertaken as part of their participation in a Music elective class. This work did not form part of any school assessment.

It was anticipated that no harm would come to any participants as a result of being included in the study and that participants would not suffer discomfort. Confidentiality was maintained throughout the study and the production of the report. All personal identifiers were codified and are not traceable to individuals. The identity of the school was not revealed at any stage. There is a small chance that students could be re-identified by their peers, but they are not the intended audience of the research and would most likely not view a copy of the case study. Copies of the findings and the final report will be made available for the school principal and the participants to access.
3.11 Chapter Summary

This chapter introduced the research methodology and design of this qualitative case study. It outlined the research context including the site and participants involved. The chapter explained the PMP in detail and outlined the methods for data collection which were used, as well as, data analysis procedures and practices. It provided appendices as examples of the data analysis which occurred and outlined the research procedures and timeline with clarity. The three stages of planning, teacher creation, and implementation were discussed in detail to break down the collection of data into clearly identifiable segments. The thesis and its form as a case study with a practitioner researcher was justified and ethical challenges were addressed. The following four chapters discuss the data, starting with the pedagogies of the teacher-researcher in Chapter Four as enacted throughout the MEMTU.
4. Enacting contemporary multimodal pedagogies

The previous chapter outlined the methodology of this qualitative study, including the research design, data collection and analysis, research procedures, as well as the ethical challenges of the research. The parameters for the PMP were also outlined.

This chapter discusses the pedagogical moves that occurred prior to and throughout the MEMTU. It is structured in two phases, where Phase One explores the attainment of skills and Phase Two reveals the application of these skills. This chapter examines the responses of students in the class to the pedagogical moves within the Phase One. Three students’ work in Phase Two are profiled in detail in Chapter Five, Six and Seven. This chapter explores how the seven pedagogical affordances (ubiquitous learning, active knowledge production, multimodal knowledge representations, recursive feedback, collaborative intelligence, metacognitive reflection, and differentiated learning) (Cope & Kalantzis 2013) were enacted through the MEMTU. In this chapter, the interactions between the students and I are analysed as we engaged with contemporary multimodal pedagogies and processes to create PMPs representing a place of special meaning to the students.

The seven pedagogical affordances were evident in various ways and combinations at different stages of the MEMTU. They are particularly relevant to this study as they draw attention to contemporary pedagogies, including multimodal knowledge representations. Appendix G: Display of lessons and seven pedagogical affordances, details the 29 lessons which constitute the MEMTU and the pedagogical affordances enacted in each. However, the MEMTU did not always proceed in the linear way
depicted in the tables, but rather, was organic, recursive, reflexive and individualised as student needs arose.

The MEMTU was organised into two phases. The first phase focused on building student capacities to create their PMP and the second phase engaged students in designing their PMP. The first phase was one of exploration, where students developed their skills by analysing audio and visual modes within multimodal texts as a class. This provided a foundational structure and encouraged the development of a common meta-language, to describe the audio mode as it combined with the visual mode to create meaning. Through scaffolded activities I modelled detailed analysis, drawing on student responses to explore the different ways in which the modes interacted with each other. This phase developed through a workshop approach, facilitating the development of compositional skills. Multimodal representations were integrated into the music classroom with a specific focus on the audio mode and how it interacts with visual and linguistic modes. The lesson sequence focused on students utilising familiar material, and learning to analyse in detail, before undertaking their compositions.

Phase Two was designed around the application of the learning from Phase One. The pedagogies deployed were highly differentiated, based on student interests and requirements. These pedagogies were experimental and developed through conferencing with individual students, as we worked collaboratively to create the PMP, throughout the MEMTU.

This chapter draws upon examples of class discussions and students’ learning journeys and demonstrates evidence of the seven pedagogical affordances within the MEMTU (see Appendix G). It explores sub question 1:
How can contemporary multimodal pedagogies be enacted in music education?

4.1 Phase One – Building student capacities to create PMP

4.1.1 Planning the learning space – the PMP and the class

This section provides a description of the pre-MEMTU preparation undertaken. Through the process of creating my own PMP and sharing it with the students in Lesson One Introducing the PMP (see appendices B, F and G for details of lessons, data collection and links to the seven pedagogical affordances), I modelled drawing upon my own experiences and interests to create *multimodal meaning*. The pedagogical moves detailed in this section model the affordances of *ubiquitous learning, active knowledge making, metacognition* and *multimodal meaning* within a Music elective.

In my sample PMP *The Search for the Precious Golden Ukulele* I drew on my personal interests focusing on travel and learning to play the ukulele. My PMP can be viewed here:


The *Search for the Precious Golden Ukulele* illustrated my love of cartoons and sense of humour with two light-hearted cartoon monsters as protagonists (see figure 4.1), chasing the golden ukulele around the world. They made comical quips such as ‘haha’
in evil sounding voices as they threatened to take over our ‘miserable planet’. The PMP drew on learning I had undertaken informally, rather than in formal educational settings, providing an example of enacting *ubiquitous learning*, where skills gained from beyond the classroom are encouraged.

Figure 4.1 – main characters from my PMP – *The Search for the Precious Golden Ukulele*

Through creating my own PMP, I modelled the learning processes that the students would follow within the unit. This deliberate shift from teacher to the role of learner, reflective of *active knowledge-making*, was made more authentic through my selection of the ukulele as the main instrument for creating in the audio mode, an instrument I had only just begun to learn to play, rather than one that I am more proficient in. I attempted to position myself as an average music student, through the removal of the reading and writing of music notation from the process and focused on playing by ear (popular music style), using the ukulele as the main sound source in my PMP. During the creation of my PMP, I trialled the scaffold below to intentionally encourage a consideration of deliberate choices to create *multimodal meaning* from the beginning of the process.
The pedagogical practice of modelling the creation of a text, as demonstrated throughout the MEMTU, provides an explicit focus on the choice of modes, interactions between modes and a sequence of creation which students are encouraged to adopt.

As the students undertaking this Music elective had varying musical abilities, I was wary of showing them a musically professional level PMP as this could make the project seem too challenging. I intended to make this project inviting and accessible, so students would be able to create a successful multimodal presentation, utilising the technology available, without the need for virtuosic instrumental skills. The MEMTU placed the emphasis on composing aurally, rather than through traditional notation, and encouraged students to experiment without the need for knowledge of notation and composition conventions. This active knowledge making relied on multimodal meaning gained from students’ personal interests and abilities.

The PMP required careful thought about the elements of the audio mode and how meaning could be created in different situations using basic technical skills on an instrument. When creating the audio mode in The Search for the Golden Ukulele, I
strummed simple chords and played basic melodies on the ukulele, and composed some accompaniments utilising a variety of sounds on the keyboard. Sound effects of specific actions were also used to add to the visual meanings. In *The Search for the Golden Ukulele* meaning was not created through the playing of difficult passages; rather it was created through combining the layers of sound together and considering the power of the musical elements. I undertook this approach to demonstrate that the PMP was accessible to every student and they were capable of producing high quality audio and *multimodal meaning*. The affordance of *differentiated learning* was evident as an extremely important part of creating the PMP, as students would be able to draw upon their experiences, conceptualise and analyse concepts at their own level. The PMP invites students to create narratives drawing on prior knowledge of the audio, visual and linguistic modes and consider their combinations when creating a range of multimodal meanings. The affordance of *multimodal meaning* allows for *differentiated learning* to occur, as students of different skill levels focus on the audio elements through links to other modes.

Pedagogically, during the planning stage I consciously positioned myself in the role of the student and constructed the final product myself. This deliberate process ensured that the scaffold would authentically represent the stages which required completion, allowed me to anticipate the types of questions and problem solving I would encounter, and provided me with ways to explain the interactions between each mode.

4.1.2 Introducing the PMP to the students – modelling and deconstructing
Lesson One, *Introducing the PMP* (see Appendix B), commenced with the students watching my PMP. I modelled the task of creating a PMP, *The Search for the Golden Ukulele*, in an attempt to motivate students and inspire their ideas for creating their own. After giving the students the parameters for the PMP, as seen in Section 3.5 and Appendix D, I deconstructed, through teacher-led discussion, the process of creating my PMP, while responding to student questions along the way. Firstly, I briefly explained each step of the process (see Figure 4.2) so that students understood what creating a PMP would entail. Then, as this was a Music elective and the focus was primarily audio centred, I unpacked the process I used for audio creation. Specifically, I explained how I drew upon musical influences to represent particular meanings which correlated with visual and narrative elements. I focused on the creation of music, rather than the use of sound effects, as this was the more complex part of the task. Two cultural musical samples were chosen for deconstruction, analysis, and re-composition into specific representations within my PMP. This process was deliberately chosen to enhance the depth of audio analysis, develop metalanguage to describe the audio mode, and consider how meanings can be reshaped. The first step of the deconstruction involved identifying the instruments within the sample. This was a simple skill and was easily achievable by all students in the class. The second step was to describe the musical features within the sample in greater detail. I utilised metalanguage pertinent to the audio mode to describe the main features (see table 4.1) to model the required level of depth expected from student when analysing their chosen audio. Then, the reconstruction process was modelled and described (see table 4.1). Overall, this deconstruction and reconstruction mirrors the process the students would undertake as a class in Phase One and then individually in Phase Two.
Table 4.1 Sample of deconstruction and reconstruction of two audio sample used in The Search for the Golden Ukulele - teacher PMP

<table>
<thead>
<tr>
<th>Country of origin</th>
<th>Instruments present in YouTube examples</th>
<th>Musical features present in examples</th>
<th>How I recreated music to represent this country in my PMP</th>
</tr>
</thead>
</table>
| Greece            | Bouzouki, guitar, accordion, drums, bass, | - melodic line utilises 3rds throughout.  
- melodic line moves mostly by step.  
- major tonality and mostly consonant notes used in the melody with the occasional dissonant neighbour note.  
- chord progressions utilising I, IV and V  
- simple, homophonic textured accompaniment with strumming on guitar.  
- Drums and bass provide rhythmical support  
- fast tempo, dance like in nature | - I added the ukulele as it sounds a little like the bouzouki  
- a simple chord progression was used - I IV I V  
- the melodic material was played in thirds  
- the accordion was used to provide harmonic support and rhythmic drive for accompaniments  
- a simple bass line was created (1, 5)  
- utilised a fast tempo |
| England           | Lute, fiddle, melodeon, piano accordion, pipe | - finger picking of lute to accompany singing, or to play solo.  
- sometimes uses dorian mode tonality  
- regular phrases  
- melodic line moves by step or chordal skip | - used a lute sound on the keyboard  
- used a ukulele to add to the lute sound.  
- worked in the dorian mode, although also included the leading note at the cadence point  
- finger picking on the lute and the ukulele with a clear melodic line played by both instruments.  
- in the style of John Dowland. |

Throughout the discussion pertaining to the PMP creation process, I briefly outlined my personal interests represented within The Search for the Golden Ukulele. This
sharing of my personal interests gave students an insight into what I valued, inviting them to explore their own interests, emotions and experiences within the MEMTU. This pedagogical move of drawing on personal interests was a deliberate step to activate the affordances of ubiquitous learning and differentiated learning. Ubiquitous learning was activated through the out of school influences chosen by students. As a result of watching my PMP and our discussions, students drew on content throughout the MEMTU (as evident in their portfolios) from their favourite video games, holiday destinations, places they grew up, animals, relationships, musicals, and television shows, to make their PMP personally meaningful. Differentiated learning was activated throughout the MEMTU as this task provided students with choice and catered to their varying learning needs and ability levels. The various audio influences selected by the students contained different levels of complexity which were analysed with varied depth depending on student ability. The primary pedagogical intention when introducing the PMP was to explicitly model the scaffold and inspire students to bring their personal interests into the process.

4.1.3 Building student knowledge around the paralleling of modes

In Lesson Two and Three, Analysing the audio mode in multimodal contexts, I attempted to situate the class further into this project and its analytical elements by analysing the cartoon film clips, Popeye ‘Lunch with a Punch’, Donald Duck ‘Donald’s Vacation’, and Cold Storage ‘A Pluto Cartoon’. My intentions were to draw on students’ pre-existing understandings of the audio mode and how it makes meaning in particular ways, in this case through paralleling. In paralleling, the audio mode links directly to a visual cue on the screen such as a sound effect for a particular action or a
particular musical idea imitating movement on a small scale. In film score writing this is often referred to as ‘Mickey Mousing’ (Kalinak 2010). These lessons involved students viewing commercially produced cartoons, developing written responses, and then sharing these with the class group through a discussion about each example. This process attempted to set the expectations for the later parts of the project by inviting the students to practise applying the musical concepts and terminology in the analysis of the audio mode and the interplay between the modes.

Students were able to identify how the audio and visual modes could work together with clearly linked meaning being made by both modes simultaneously. Whilst the examples used were fairly simple and quite ‘Mickey Mousing’ in nature (the audio relating directly to visual actions), they created openings for the students to reflect on the many different meanings that occurred in the cartoon and how they were portrayed through the visual and audio modes. The film clips selected for this lesson featured very obvious cues in the audio mode so as to be able to correspond to the visual mode and create clear meaning within the narrative. The examples highlight the stereotypical audio meanings that are used to indicate situations, emotions and activities. For example, dissonance is often associated with danger; major up-tempo melodies can indicate happy times; minor keys can indicate sadness; and lullabies can indicate sleep. Such analytical work comprised an important part of the MEMTU as it required students to recognise the obvious; identify and describe what the audio mode was doing and how it related to the meaning of the visual mode; and examine some stereotypical audio meanings that they had come to take for granted. The cartoon film clips used the visual mode as reference points for specific paralleled meanings.
Students were asked to explicitly describe what the audio mode was doing to create this meaning. We watched each film clip twice, as a class, with students having the opportunity to respond to the visual cues through independent writing after the first viewing. The students were asked to describe ‘in detail the music, pitch, tone colour, rhythms and clichèd ideas’ (TRJ 20120622)

We spoke about the use of particular instruments such as the bassoon to create mystery and intrigue, muted trombone to show the proud character of Pluto… the frantic clarinet twists and turns in the fight scenes. Bright major chords on the sunrise. There was an ironic lullaby with the rusty roofed doghouse and muted trumpets playing (TRJ 20120622).

The preparatory analysis of the audio mode in the Cold Storage cartoon (Disney 1951) required students to recognise the contribution that the audio mode was having to the overall meaning. Whilst practising music analytical skills in describing the audio, the students also made connections between the uses of particular instruments to create certain meanings as noted in Figure 4.3 below. This first example was highly scaffolded by the teacher through class discussion and explanation.

Figure 4.3 – An excerpt from a student’s portfolio of the Cold Storage paralleling analytical task, aligning selected visuals and audio analysis (PGG 20120622).

<table>
<thead>
<tr>
<th>Prompt on worksheet</th>
<th>Student analysis of audio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pluto takes his pulse</td>
<td>Fast paced drum beat (bongos maybe) and nothing else. Highly percussive. Uses as more of a sound effect to signify his confusion (fast-paced pulse)</td>
</tr>
<tr>
<td>Pluto runs at doghouse and is stopped by beak</td>
<td>High register trilling of woodwind instruments as Pluto stops in front of beak. Thudding noise as he drops to ground.</td>
</tr>
</tbody>
</table>
In this example, one of the students, analyses the audio that accompanies the visuals of Pluto taking his pulse. The student’s analysis identifies rhythmic features, instrumentation, and the role of music as seen in the identification of, ‘fast paced drum beat’, ‘(bongos maybe) and nothing else’ and ‘a musical sound effect to signify his confusion’. In her analysis of the accompanying audio to the visual, ‘Pluto runs at doghouse and is stopped by beak’, the student refers to pitch as ‘high register trilling’, the instrumentation being ‘woodwind instruments’ and makes specific reference to the relationship between audio and visual in, ‘(thudding noise as he drops on ground)’. The pedagogical decision to analyse paralleling has provided the student with a specific focus and her audio metalanguage attends to multiple musical elements per visual point of reference. In her analysis of the audio that accompanies the images of ‘Lullaby’, the student notes the irony of having ‘Rock-a-bye Baby’ played by the contradicting and harsh sound of muted trumpets. The student’s analysis shows evidence of understanding that the audio mode interplays with the visual mode to enhance meaning through paralleling actions, and also presenting contradictory material as a means of identifying with the character. The clip provides a rich foundation for students to reflect on the power of multimodality and how it can be used in different ways to enhance meaning.

The students drew on class discussions around the multimodal clips to build a vocabulary of ways in which the audio mode could make meaning. This was in addition to the specific visual prompts which students were asked to describe in terms of the audio. In her descriptions made in the blank space around the title at the top of
her worksheet, seen below, a student describes other musical events that occur in the clip that were discussed in the lesson foregrounding the importance of collaborative intelligence in developing the skillset required for analysis later in the MEMTU.

Pizzicato double bass – signifies something’s wrong
Contrabassoon – really low bassoon, good for comical sounds, sinister sounds
Ascending notes build up to something – creates suspense (PGG20120622)

The student identifies several audio meaning-making devices from the class discussion that she views as important for the creation of her own PMP. She identifies the role of ascending notes in building suspense in this clip. She also identifies the contrabassoon (which is a bassoon that sounds down the octave, usually used for very low passages) and mentions that it is useful for creating comical and sinister sounds. Throughout this lesson the students built an ideas library from the clips that we viewed, that they could then apply in their own PMPs.

This lesson utilised the affordances of multimodal meaning and recursive feedback, which started to build collaborative intelligence. It allowed students to draw upon their prior knowledge (learning that had occurred in previous years of school and outside of the classroom), ubiquitous learning, and work to their own pace with a detailed scaffold which allowed for differentiated learning. The students were engaging with reasonably familiar content, several cartoon film clips, but examining it in new ways. They described the clips using musical terminology, with specific reference to the paralleling occurring between the audio and visual modes. The students were given a scaffold of how to analyse multimodal texts, in particular with the audio mode, and to look at the interactions between the modes. The affordances of collaborative
intelligence and recursive feedback were utilised in this lesson as the students worked as a team to provide fragments of the analysis, and I acted as a facilitator to elicit the ideas from them providing constant recursive feedback throughout the process. I encouraged students to build upon each other’s responses to provide a more detailed description of the audio mode and its interplay with the other modes. This allowed them the opportunity to develop their own understanding of the musical terminology. This lesson provided students with an example of how to describe the audio mode within a multimodal text. This was what students would need to do to analyse their individual outside-of-school experiences with multimodal texts, in order to make use of them in their PMPs later in the MEMTU.

4.1.4 Students’ applications of understandings in group settings

The aim of the second part of Lesson Two and Three, Analysing and creating in multimodal contexts, was to have the students observe the meaning of the visual and to try to enhance the meaning by creating in the audio mode as a class group using their collaborative intelligence. This would allow them to interpret the visual and apply their own experiences to creating audio for the video scenes. After the earlier analytical work with several cartoon clips, students were required to apply their knowledge and skills in creating a soundtrack in a group setting. They were given the task of creating the soundtrack to The Band Concert (Disney 1935) cartoon. As the students planned their work, they watched the clip several more times, rehearsing their ideas, before giving a final performance. Figure 4.4 provides the teacher descriptions
of visual points of reference within the clip, enabling students to focus on specific audio moments.

Figure 4.4 A visual outline of the storyline from *The Band Concert.*

<table>
<thead>
<tr>
<th>Description of visual</th>
</tr>
</thead>
<tbody>
<tr>
<td>The band performing on a rickety stage in a park.</td>
</tr>
<tr>
<td>The band blasting out the opening chord with music and hats blowing all around.</td>
</tr>
<tr>
<td>The conductor, Mickey Mouse, coaxing solo lines from tuba player.</td>
</tr>
<tr>
<td>Donald Duck causing mischief with his collection of piccolos.</td>
</tr>
<tr>
<td>The repertoire, The Storm, which provokes the weather.</td>
</tr>
<tr>
<td>A tornado wreaking havoc on the concert.</td>
</tr>
<tr>
<td>The aftermath of the storm.</td>
</tr>
</tbody>
</table>

Whilst the end result of their soundtrack was a long way from being polished, the students experienced being creators of the audio mode, working with designing meanings to correspond to the visual mode. The two students’ portfolio excerpts seen below, show their reflections on the activity.

Our Mickey Mouse class activities was almost catastrophic or could even be classified as a ‘fail’…However, while doing it, it was easy to imagine what kind of music which would go with it, the execution however was really bad and not what I expected. (PEz20120720)

Each person was designated a different musical instrument e.g. I played the bassoon and Ezra played the trumpet…I tried to keep playing something depending on what was occurring on the screen. In faster moving chaotic running scenes I tried to play
faster and in the walking scenes, scenes where characters had sad faces, I tried to play slower and minor notes (black keys). (PC20120720)

Although the girls were ‘thrown in the deep end’ with this task, it allowed them to ‘imagine what kind of music would go with [the visuals]’. There were issues with the execution of the music creation. The second student recognised and described specific visual cues that prompted an audio response from her such as ‘In faster moving chaotic running scenes I tried to play faster’. She also connected the characters having ‘sad faces’ to playing ‘minor notes’. Despite the challenges in orchestrating the audio track for the cartoon, the students were able to recognise different possibilities for the audio mode so as to parallel the visual mode.

4.1.5 Building student knowledge around the complementing of modes

After exploring the paralleling of modes in cartoon clips in earlier lessons, we explored complementing of modes in Lesson Four. Whilst complementing of modes is similar to paralleling of modes in that the audio meaning supports and agrees with what is happening in the visual, complementing of modes does not rely on finite visual cues or ‘Mickey Mousing’ between the two modes. Rather, it is the general setting of mood established by a number of cues that occur over a longer period of time in both the audio and visual modes. This lesson continued building knowledge through recursive feedback and collaborative intelligence as the students were encouraged to describe multimodal meaning as it occurred. The examples I selected for use in Lesson Four,
Revisiting task parameters and complementing modes, were two versions of two clips from the movie Jaws (Benchley, Gottlieb & Sackler 1975).

The first scene was selected to demonstrate the power that is available through the audio mode. The first clip featured a female running into the water for a swim with tensions rising as Jaws circles and then attacks. It was accompanied by the music The Blue Danube Waltz (Strauss), which comically contradicted the suspenseful and frightening attack of the great white shark on a lone female swimmer. The use of the contradiction of modes in the first example allowed for the meaning of the scene to be altered, being a direct contradiction to the original version of the soundtrack. Rather than hearing scary low-pitched repeated semitone motifs, we heard the famous The Blue Danube Waltz connoting feelings of joy. The clip was so well made that the students were left wondering if the lone female swimmer was really just swimming and laughing, before the finale of the scene where the shark appears. The students did not recognise the movie or the storyline until we watched the second version of the clip. The second version of the clip featured the actual soundtrack with the famous low-pitched, semitone motif, which was very easily recognised by the students. The original soundtrack complemented the true meaning of the visual, danger lurking followed by a shark attack. The two versions of the clip can be viewed at the following links.

https://www.youtube.com/watch?v=7acI5z9vyok (Version 1 – with The Blue Danube Waltz audio)

https://www.youtube.com/watch?v=yrEvK-tv5O1 (Version 2 – with the original audio)
This extract from the class discussion is an example of collaborative intelligence where students were initially able to recognise the emotions in the clips and through specific questions were able to unpack the audio elements as a class.

Student 1: It was dark...
Student 2: Fearful, suspenseful.
Mr V: What was suspenseful or fearful about it?
Student 3: The music was more of a suspense, a motif, leading into...
Student 4: It felt like tension. Because first it was quieter, and we just heard the sounds from the beach, and we kept on thinking that the shark was there...but then the music cut in and we knew it was the real thing. And it increased the tension even more because we knew that this was it

Mr V: What was it about the music that increased the tension?
Student 3: It gets faster and
Student 5: Louder. It starts off soft with only one kind of texture, but then texture increases and everything builds up. It’s a big sandwich!

Mr V: A big sandwich, okay. What about the pitch?
Student 2: Low.

Mr V: Was it major or minor? Semitones? What about the chord that you heard? Diminished chord or augmented chord (plays)

Student 3: It was something not major or minor. (CD20120718)

This excerpt demonstrated how students tended to revert to using the terminology that they are most familiar with initial observations being about mood and emotion, ‘fearful, suspenseful’. I then immediately probed for more information and began to receive comments that relate to the musical content, ‘a motif, leading into...’ and ‘first
it was quieter…” I had to ask specific questions to assist students in unpacking the audio using musical terminology. Through this questioning technique I led students through the analysis of the audio by referring to specific musical elements encouraging the development of audio metalanguage rather than superfluous analysis. This type of questioning and discussion was a pedagogical tool which continued throughout the MEMTU to continue to encourage deep analysis of the audio within multimodal creation.

The second scene was chosen to reinforce the power of the audio and allow students to formulate their own audio interpretation. The clip was from late in the film with several men in a boat planting a tracker and hunting Jaws in the ocean. The first version of this clip had no music, only dialogue and diegetic sounds, allowing students to speculate the possible musical soundtrack for the visual provided. This pedagogical move refocused the attention of the multimodal film to foreground the audio mode. Teacher questioning shifted students from describing the atmosphere of the clip to the musical elements required to create the atmosphere. The second version of this clip revealed the original soundtrack allowing students to compare and contrast their ideas with that of the original.

These series of activities focused on the skill of complementing and provided another scaffold for students to follow in Phase Two when selecting, analysing and recreating their own multimodal and audio meanings.
4.1.6 Technology teaching in group settings

Utilising new technologies is always a challenge and can present many surprises within the learning space. As the teacher of a unit of work that relies heavily on technology, I needed to plan for problems with equipment not working and be able to actively troubleshoot multiple different issues that occurred at the same time.

I gave demonstrations of how to use the software and the processes required to complete the task to the whole class as part of Lesson Five and Lesson Seven (see Appendix B). I tried to keep these sessions simple by explaining the basics whilst demonstrating via a data projector, completing a small fragment myself for everyone to see. I then asked the students to follow the same steps and attempt to complete a short practice task, providing an opportunity to explore the functions of each program and seek clarification if needed.

In Lesson Five, I demonstrated the use of the Xtranormal website as a means for animation of character and creation of voiceovers. Students were given a login for the site and shown how to create, edit and export video files. They were then provided with an opportunity to experiment. I also demonstrated the essential video editing software Windows Movie Maker and the more complex Pinnacle Studio for compiling and constructing the visual and linguistic modes, into which audio would be imported. I demonstrated how to import images, movie files, sound effects and audio files into the timeline of each software. Pinnacle Studio allowed for the use of green screen technology, which was useful for changing the background image for Xtranormal animations created on a green screen. These platforms were deliberately chosen as the simpler and more familiar Windows Movie Maker provided an access point to students who were not confident technology users, Xtranormal was new to all students and
provided an aspect of challenge and fun, while Pinnacle Studio allowed for more complex video creation. The technology allowed students to have a certain level of freedom in how they created their PMP. They could customise their process to a way that best suited their learning needs.

The technology modelled and deconstructed, provided an accessible and easy way to create in the visual and linguistic mode. This pedagogical choice was intentional so that students could focus their attention on the analysis and creation of the audio mode within the multimodal context.

In Lesson Seven I presented students with a demonstration of how to use the Cubase software to create audio. Cubase is a midi and audio sequencing program that allows students to record and manipulate their audio ideas. It allows for video files to be imported so audio can be created in synchronisation with the visual and linguistic. I demonstrated how to import a video file, create a click track, create a midi instrument track, select sounds, manipulate midi material, record and edit audio with a microphone, import audio files including sound effects, and some mixing basics. Cubase was chosen as it has a clear visual interface for students to create and edit multiple layers of audio and midi. Students were given time to experiment with and explore the functions of Cubase, allowing them to ask clarifying questions and receive assistance.

Specific functions of Cubase were revisited throughout the MEMTU when pertinent to the creation process. In Lessons 11 and 12, recording and manipulating midi and audio was revisited. Lesson 15 and 16 explored the manipulation of sound effects within Cubase. Lesson 25 reviewed the mixing process as students were completing 103
the final stages of their PMP. The process of revisiting significant skills and working backwards to move forwards was highly significant in ensuring the consolidation of understanding and skills for students.

4.1.7 The seven pedagogical affordances within Phase One

Phase One allowed a common core of knowledge to be discovered and explored throughout the various activities while working in a multimodal environment. Throughout Phase One, the deliberate use of modelling and scaffolding developed student skills in musical analysis, audio metalanguage development, and multimodal meaning analysis and creation in group settings. The modelled PMP allowed students to deconstruct the parameters of the task and ask clarifying questions, while also setting the expectations of depth of audio analysis and encouraging the compositional process. The seven pedagogical affordances were evident within the various pedagogical moves of Phase One with multimodal meaning enabling the other six affordances in various combinations. They interacted to encourage learning in a number of ways and were difficult to isolate in operation throughout Phase One. Collaborative intelligence and recursive feedback featured in group analytical and creative tasks. Students were active knowledge makers when creating the soundtrack for a cartoon film clip. This task encouraged metacognition to take place for the students as they self and peer assessed their work and made observations about what skills they would improve when they created the soundtrack for their PMP. Having students engage with personal interests encouraged ubiquitous learning; to gather content for their own PMP from outside of the classroom. Differentiated learning
occurred throughout the analytical tasks through the various levels of questions being asked, and as the task provided access points to students of various musical skill levels.

In Phase One, in preparation for creating their own personal multimodal presentation, the students analysed the multimodal interactions of several short clips. They described the function of the audio mode in creating emotions to complement the visuals. The following audio elements were considered: the instruments, the registers of the instruments chosen, tonality, texture, dynamics, sound effects, genre, and silence. The students worked collaboratively on analysis, developed their descriptive language and realised the power of the audio mode in eliciting meaning. These class activities foregrounded the fundamentals that would drive their work in Phase Two.

4.2 Phase Two – Engaging students in designing their PMP

The focus of Phase Two was the creation of the PMP. This section will describe the main pedagogical moves made by the teacher throughout Phase Two. Chapter Five, Six and Seven will explore the interactions with three selected students and their approaches to the conceptualisation, creation and reflection upon the PMP process and product. Similar to Phase One, the pedagogical moves will be examined using the seven pedagogical affordances as the analytical tool. The examples of pedagogical moves are predominantly student-teacher interactions, varied in context and featuring students of different musical skill levels. They demonstrate the wide range of musical backgrounds and personal interests in which the teacher needed to manoeuvre within the MEMTU. The learning journey of three students will be explored in full in Chapters Five, Six and Seven.
4.2.1 Developing the linguistic and visual context for the PMP

As seen in Phase One, Lesson One (see Appendix B) introduced the students to the PMP journey and final product, by viewing my PMP and hearing about the steps involved in its creation. Students were then given the PMP parameters and asked to consider the personal interests they would like to explore and collect images that reflect these interests. This pedagogical move encouraged student ownership of the PMP allowing the context to be of a personal nature. From the outset this pedagogical move advocated *ubiquitous learning* as it valued influences from beyond the classroom and called upon the students to shift their understanding of where learning occurs. They collected their images outside the classroom, created video content in their own time, and sought influence from family and friends. This unit was planned to ensure that students had the holiday period to collect the visual and plan linguistic elements within their personal environments.

Between Lessons Four to Nine, it was evident that students were operating at different paces and that some were having difficulty in deciding upon and structuring their visual and linguistic influences. Through these lessons I decided to break the tasks down into smaller steps. I asked the students to reflect in their portfolios about their initial planning, to storyboard, and to explain how their ideas are personally meaningful. This process assisted students to develop their thoughts. Throughout this time, I circulated amongst the class and asked the students individually about their linguistic and visual choices, how these would be constructed into a PMP, and which technological skills would be required to thread these together. This acted as a way of providing *recursive feedback* to the students so that they remained engaged and on
track. It also afforded the opportunity for a widely differentiated Music elective, with students analysing and then creating at a level appropriate for them and allowing them to focus on areas of personal interest. By breaking down the steps of how to create a PMP into many smaller tasks, I provided a scaffold for students to follow. This scaffold, whilst initially being delivered to the entire class in the early lessons, became more and more individualised to cater to unique learning needs as the unit progressed.

Initial interactions with students built rapport and focused on their personal interests and influences, prior to the analysis of content. This ensured that student choices, interests and intentions led the process and discussions. It also facilitated a learning space where collaborative intelligence was encouraged through scaffolded questions that led students into analysis and evaluation which would guide their thinking in the composition process.

The storyboard process encouraged students to identify their intended meaning using the visual and linguistic mode. Storyboards demonstrated active knowledge making through the ability to transform ubiquitous learning experiences into meaningful text, as they show the progression of student influences and experiences into multimodal plans. These storyboards gave me an insight into the student’s ideas and provided an access point for meaningful learning conversations.

A key pedagogical aspect throughout MEMTU was the incorporation of new technological platforms which foregrounded the audio mode for students. For example, the use of Xtranormal characters for carrying the storyline through dialogue. Students were keen to experiment with this software and it presented a key motivating factor which maintained student interest.
4.2.2 Developing the audio mode for the PMP

Following the establishment of the personal interests and plans for the PMP through teacher-student discussions, my questioning progressed to the audio mode. I was particularly interested in how the student had paired the mood or emotion of the visual to the chosen style of music. These questions highlighted the areas yet to be developed in student thinking:

Mr V: Have you had any thoughts yet about the music or the style of the music to accompany your visuals? (CEz20120803).

Initially, many students were unsure what to say about their audio modes. I aimed to provoke students to carefully consider the reasoning behind their audio choices, the intricate meanings associated with these choices, and how they impact on the multimodal meaning, while equipping them with the appropriate metalanguage to best describe and analyse their choices. My initial interactions with students intended to highlight the scaffold that we had explored in Phase One in order to encourage them to undertake audio analysis individually. The feedback provided encouraged metacognition where students could consider the nature of the task and the reasons for including particular musical influences within their PMP. It also reminded them of the scaffolded analytical steps that required undertaking in order to better understand audio influences and foster their own creative choices within the audio mode.

After encouraging students to undertake their own initial audio analytical work, I then worked with students to delve deeper into how the modes interact with each other. By
asking probing questions about moods and emotions, I was able to encourage students to better articulate their intentions and how they imagined the audio mode would play out in their PMP. To build on the accuracy of their metalanguage and also to gain a better understanding of their progress, further questioning was implemented. A discussion of emotions and experiences then allowed me to ground the development of audio concepts into a tangible and understandable context for students. My questions focused on the gaps in students’ ability to appropriately ascribe metalanguage to their musical ideas. We are able to unpack the audio mode and develop the use of metalanguage collaboratively. These discussions reveal the critical role of the educator in the development and refinement of musical terminology when deciding upon and analysing the audio mode which will best correspond with intended multimodal meaning. This learning conversation aligns with Vygotsky’s Zone of Proximal Development (Vygotsky 1978), where scaffolding at the point of need enables a mastery of previously misunderstood audio metalanguage. Ultimately, while some of the audio decisions students made were improvised or subconscious, analysing the audio content encouraged students to deepen their understanding of the audio mode and find appropriate metalanguage to accurately convey their intended meaning and thus transferring the audio meaning to the linguistic mode.

My questioning reoriented the student’s metalanguage from visual descriptors to specific audio terminology. This foregrounds the way that one mode can facilitate understanding in another mode. As the student moves her analysis from the visual to the audio mode, her audio metalanguage is developed. This occurred through collaborative intelligence which was an important part of the recursive feedback process, as it furthered their metalanguage and skills in the moment.
4.2.3 Using technology as another access point

The use of the latest technology to create the PMP allowed the students to combine their ideas within the visual, linguistic and audio modes into a multimodal text. The technology utilised in the creation of the PMP has already been listed in Section 3.3.1 and discussed in section 4.1.6. Because of the subject specific software students were often faced with uncertainty about how to complete a particular task. The audio creation software, Cubase, was a particularly complex software with many functions beyond what I could teach in the Music elective. I only demonstrated the basics for recording and manipulating midi and audio ideas to the class and then had the students experiment with the same workflow. As the MEMTU invited student input, I took advantage of student technology questions to engage with their project and develop their audio metalanguage.

The recursive feedback associated with technological assistance also caused the students to self-assess their musical ideas. Issues with technology enabled the discussion which then moved into analysis of audio content and the development of audio metalanguage.

A critical and often invisible factor in a unit such as this is the grasp of technology that is required by the teacher. When using subject specific software, such as Cubase, knowing how to use the technology is not enough. It is valuable to know how to use the technology in various ways and be able to adapt and react in order to solve problems that arise for students. Whilst some researchers have recognised that students are able to utilise technology in the creation of music without assistance outside of the classroom (Green 2008; Partti & Karlsen 2010; Väkevä 2010), this study found that the majority of students were unfamiliar with subject specific software such as Cubase.
I adjusted my notion that students are technology literate and could work out what to do, and instead found ways to ensure that students had the required skills to achieve their desired meaning, even supporting students individually. Much of the success of the unit relied upon my ability to communicate with the students how to utilise the technology to assist their creative process, limiting the amount of time where they experienced difficulties using technology and keeping morale high.

Throughout Phase Two, I acted as a sounding board for student ideas, while assisting when difficulty arose with developing their visual and linguistic content, audio analysis work, use of technology, and creation of musical material. This recursive feedback often led to collaborative intelligence as the student developed their ideas through these learning conversations. The examples in Phase Two demonstrated how when engaging in active knowledge production the teacher was called upon to quickly grasp student audio and multimodal examples and operate in multiple contexts that they were unfamiliar with. Whilst the parameters of the MEMTU created opportunities for deeper learning for students, they also presented many challenges for the teacher.

4.3 Teacher challenges working in student selected contexts

Asking students to consider and use self-selected material presents some challenges for the teacher. Firstly, the lack of familiarity with student selected material means the teacher is not fully knowledgeable about the specifics of the context, making the student better informed. Secondly, the material may not be easily accessible for the teacher, and they then have to rely on the descriptions of students, rather than having a primary source. And finally, the uncertainty of never being sure what is going to be brought into the classroom can put the teacher in a more vulnerable position than they
are used to. This requires educators to rely on their own musical capacities in the moment rather than having prepared materials and a planned lesson. The benefits of this approach encourage student ownership. The activation of prior knowledge was facilitated when I moved away from content driven traditional teaching practices and towards student driven learning opportunities.

For me as the teacher, this uncertainty made the MEMTU incredibly exciting, as this resulted in a wide variety of audio, visual, linguistic and multimodal content entering the music classroom. It also changed my role from a content provider to a participant in the creative journey. This pedagogical approach also required me as the educator to have an acute awareness of the questioning methods used. Through learning conversations, I led students through a series of scaffolded questions which were not content dependent. This enabled students to develop their audio analytical skills, consider the multimodal meaning, and develop their use of audio metalanguage. This was achieved through providing recursive feedback in the moment, and also by becoming a co-creator alongside the student, collaborative intelligence was realised. Overall, the pedagogical moves made in Phase Two, were not context driven, rather the student selected content was a vehicle for the teaching of specific analytical skills and to facilitate the development of audio metalanguage. I was required to adapt my questioning in the moment depending upon what the student was doing, how they responded to my initial question, the context of their audio influences and my instantaneous analysis of their content, and the student’s musical skill level. The MEMTU allowed for a highly differentiated learning environment to function within the Music elective.
4.4 The seven pedagogical affordances within the MEMTU

The processes that occurred throughout the MEMTU can be summarised as follows:

- Phase One
  - Planning the learning space.
  - Introducing and modelling of the PMP process.
  - Building students’ knowledge around paralleling and complimenting of modes.
  - Applying students’ understandings in group settings.
  - Teaching technology in group settings.
- Phase Two
  - Developing the visual and linguistic context for the PMP.
  - Developing the audio mode for the PMP.
  - Using technology as an access point to student PMP creation.

The order of these processes was not fixed, as they were cyclical in nature with deeper meanings developing after more experience. Whilst creating their PMP within Phase Two, the scaffolded pedagogies reiterated by the teacher encouraged students to return to the Phase One stages. They explored the meanings behind their personal interests and combined them to tell a personally meaningful story. In doing so, they analysed their audio influences, developed their audio metalanguage, and reconstituted their audio ideas into new ideas that fit with their visual and linguistic meanings. Access to technology had allowed for students to create multimodal texts and specifically to focus on the audio mode through midi and audio sequencing.
The seven pedagogical affordances regularly appeared throughout the two phases, individually and in a number of combinations. In Phase One the students were given the tools to analyse their previous experiences and personal interests through class activities that mostly explored *multimodal knowledge representations* and *collaborative intelligence* when making discoveries. Phase Two moved from a more teacher led learning environment to one that was student driven and highly recursive in nature. The students undertook a learning journey to create their PMPs, following the steps that I had taken prior to the MEMTU commencing. They became problem solvers who were in control of their own learning throughout Phase Two undertaking tasks that were relevant to their PMPs (*differentiated learning*), drawing upon examples from inside and outside of the classroom (*ubiquitous learning*), engaging in detailed discussions with peers and teacher (*recursive feedback* and *collaborative intelligence*), thinking deeply about musical elements that create audio meaning in contexts relevant to each student (*metacognition*), and all whilst actively creating multimodal content (*active knowledge making* and *multimodal meaning*).

The MEMTU featured the analysis, transfer and creation of meaning across multiple modes. As meaning was explored in the visual, audio and linguistic modes within multimodal and monomodal texts, we discovered and developed our vocabulary to describe the occurrences. As meaning-making drove the PMP, the students learnt to describe meaning from one mode and transfer it into another mode, through reflection and multimodal composition. Student understanding became deeper and more detailed as they gained experience in the creative process through analysing, deconstructing and creating. As the learning became more sophisticated it became more challenging for me as the teacher, as I did not know what to expect in each lesson and really had to improvise when responding to the student-led work.
Music composition is often viewed as a discrete and bounded monomodal domain with its own practices and traditions undertaken by the composer (Kress & van Leeuwen 2001), but in the MEMTU it intertwined with the visual and linguistic modes. The creation of a PMP required the students operate within multiple modes of meaning. They had to analyse meaning in the visual, linguistic and analyse modes and synthesize their understanding of the individual modes through paralleling, complimenting and contradicting meanings in a multimodal creative context. Students applied the knowledge gained in their analysis work to create meaning in their own ways in their PMPs. Whilst this chapter focussed on the steps of the teacher pedagogies, answering sub-question one, the following three chapters will explore the learning journeys of three distinctly different Music elective students as they created their personally meaningful stories representing their individual identities.
5. Shifting the focus from the linguistic to the audio: Galaxy Girl’s journey in multimodal meaning-making

The previous chapter addresses sub question one, ‘How can contemporary multimodal pedagogies be enacted in music education?’ It explores the contemporary multimodal pedagogical moves that I enacted as the teacher throughout the MEMTU, highlighting the benefits of teacher modelling of the skills and a sample product, the influence of collaboration on the development of student audio metalanguage and also the necessity for the teacher to be flexible and adaptable to the in-the-moment interactions occurring during the process of student creation. It divided the MEMTU into two distinct phases. Phase One was more teacher centred and introduced the students to the skills that they required to analyse and create multimodal texts. In Phase Two the learning was primarily student centred, with each student creating in an area of personal interest. Chapter Four made connections between my pedagogies and the seven affordances (Cope & Kalantzis 2013). In addressing sub-question one, the previous chapter also recognised the important role of technology in facilitating multimodal learning opportunities. Chapter Five, Six and Seven, address sub question two, ‘How are students’ multimodal meaning-making capacities enabled by contemporary multimodal pedagogies in music education?’ They focus on the student driven creative process that occurred in Phase Two with examples of three students’ work over the course of 27 lessons.

Chapter Five explores the journey that Galaxy Girl (student selected pseudonym) undertook in creating her PMP throughout the MEMTU. It investigates the ways in which she engaged with the project and her initial reliance on the linguistic mode.
Galaxy Girl’s process was tracked throughout the unit of work and insights are provided based on her portfolio, individual feedback discussions, classroom discussions, videos of staged examples of her work, and my teacher reflective journal. The chapter explores Galaxy Girl’s special places and connects the intended meanings of her PMP with her prior interests and skills, foregrounding personal interest as an important facet to enabling multimodal meaning-making in the Music elective. Her deliberate choices in design and construction are examined and her reflections on the PMP are considered. The chapter also examines the musical and multimodal backgrounds of Galaxy Girl. Her initial stages of PMP creation are discussed, conveying her personal influences, as she explores the linguistic and visual modes. Following, Galaxy Girl’s interactions within the audio mode in the context of multimodal creation and application of the individualised teacher scaffolds are examined. Her evolving musical metalanguage is used to demonstrate how students build upon teacher collaboration and, through personal application, create unique multimodal meanings.

The following sections will discuss and describe her journey in multimodal meaning-making as she interacts with the teaching pedagogies throughout the unit of work and how they are supported by the seven pedagogical affordances.

5.1 Discovering Galaxy Girl

Galaxy Girl who had played the piano for seven years prior to the MEMTU. She completed on average, two hours of practice per week. She was a member of the 100-voice school choir and had previously played cello with the school Symphony
Orchestra (QGG20120622). Whilst using technology for gaming, Internet searching, communication, and school assignments, Galaxy Girl had never utilised technology to create multimodal texts prior to the MEMTU. Typifying the music technology skills of the rest of the class, she had some experience with using Cubase in Year 8 and 9, but this was limited to a simple 12 bar blues composition task and recording a basic rock song (QGG20120622). Despite encountering prior difficulties with technology in the music technology laboratory, she was keen to engage with the technological facets of the MEMTU. Galaxy Girl created her pseudonym shortly into the unit of work because of her interest in outer space.

5.2 Making meaningful connections by bringing personal interests into the PMP

5.2.1 Multimodal design: Initial stage of the PMP

Galaxy Girl was instantly engaged by this project. She made detailed notes in her portfolio and completed the planning for her initial idea over the holiday period, demonstrating ubiquitous learning, after having just three introductory lessons, and began creating a PMP that was ‘storybook’-themed.

It will look at ‘different settings (i.e. places) found in different narrative genres (e.g. sci-fi, fairytale, horror) through excerpts of some individual, short stories (probably written by myself to avoid copyright issues). It will consist of video and photo footage of words of a story as well as the settings being described. By using different genres of stories in the film clip, it will be easier to achieve diversity in the music later through styles of music, instruments, tone colours, texture, etc (PGG20120710).
Galaxy Girl began her PMP by favouring the linguistic mode, conveyed in the above excerpt. She wrote four short stories in different genres and began collecting still images and filming herself typing these stories, demonstrating an ability to integrate the visual mode. School based text composition has predominantly privileged the linguistic mode first, so Galaxy Girl demonstrated a reliance on familiar elements when trying to compose a story to commence her PMP, evident in the complex vocabulary choices and sentence structures of the fictional mode in the excerpt below. She also had a clear plan for the visual elements of her PMP, video and footage of words and some images of the settings. She planned to address the audio requirements of the task: utilising different genres and styles of music. Here is one of Galaxy Girl’s short stories.

Fairy-Tale story

Once upon a time in a land far away, there existed a grand kingdom, abandoned long ago by its previous inhabitants. The deserted domain was isolated from its realm, hidden amongst fierce mountain ranges and vast stretches of radiant forest. Although time had consumed much of its former glory, with vast plains of fertile farmland turned to wicked jungle and quaint village houses disintegrated and decayed in the wind and rain, the kingdom’s majestic palace still stood tall upon its hill above the land. Its walls were crumbling, and the decades had paled its once bright hues of reds and blues, but the lovely castle battled against the forces that had led the rest of the kingdom to ruin. Perhaps it did so in hope that the castle’s final and only resident could...(PGG20120711).
Galaxy Girl wrote freely and created vivid imagery, which aided in visualisation of key ideas and concepts. She outlined ideas for developing her linguistic content into a PMP in her portfolio, which transposed the stories from the linguistic mode to include the visual mode, reflecting educational research that recognises the progression from the linguistic to the visual modes in early examples of multimodal tasks (Kress & van Leeuwen 2006).

The idea of the videos is that I’ll type out the stories on my computer (I’ll film myself doing it) and there’ll be a collage of pictures of the settings mentioned in the stories (this is where the theme of ‘a place special to you’ comes in). In the movie, I’ll probably stop typing in the middle of sentences and delete what I’ve written which will end every section of the movie, stopping the music and pictures coming out abruptly before starting on another section (PGG20120718).

This excerpt displays Galaxy Girl’s ability to use the visual mode to add meaning to the linguistic mode, emphasising the occurrence of abrupt stops, deletion and rewriting; thus, encapsulating the process undertaken when composing short stories in the linguistic mode. She also described how she would include the audio mode to cater for the different genres of the short stories.

I think that this idea of short stories in different genres like sci-fi, romance, fairy-tales, etc. will also allow for different genres of music, different instruments and varying textures. I’m hoping to have a main theme in the music throughout the different genres of music too in order to connect them together somehow. I also hope to create short pieces of music for the intervals, between the short story bits (PGG20120718).
Galaxy Girl exhibited structural awareness of her PMP and how the multimodal elements could fit together. Whilst she had yet to provide any details about her musical ideas, she had a clear understanding of how she wanted to connect the audio mode with the visual and linguistic modes. She demonstrated an awareness of the power of musical theme and how it can create unity within the audio mode.

I’m still deliberating whether or not to have a voiceover for the stories over the pictures. I may also be using sound effects (PGG20120718).

Galaxy Girl had also considered the spoken part of the linguistic mode through the possible use of a voiceover. Whilst beginning her PMP with a linguistic focus she demonstrated an awareness of the creative decisions and interactions between the other modes. She exhibited an understanding of the roles of the modes and the requirements for the creation of a successful PMP.

I believe that this multimodal project will effectively reflect aspects of myself through the original stories written by myself. The little intervals between the stories show my love for procrastination and might show some of my interests too. The text also manages to tell a story, or rather a number of stories (PGG20120718).

For Galaxy Girl the MEMTU enabled the personalisation of the creative process, evidenced by her preparedness to reveal identity markers, and aspects of self, including a tendency towards procrastination during the early stages of crafting her PMP. Throughout the initial stages of her PMP, Galaxy Girl engaged in ubiquitous learning, multimodal meaning and active knowledge making.
5.2.2 Take two

Despite relying on the linguistic mode for both comprehension and composition, in the fifth lesson Galaxy Girl realised that the parameters of the PMP restricted the number of words allowed (150) and did not accommodate her initial idea. In this lesson, she reflected on the requirements of the task and came up with a new plan for her PMP over the weekend.

Since I learnt that there is a limit to the number of words...I’ll be scrapping my previous idea. Instead, I will probably create a presentation about a ‘special’ place to me, my home. But rather than just use my literal home in the presentation, I’d like to go a bit broader. By using the theme of ‘a home’, I will use images of my physical house, Australia, the Earth, the Solar System and Milky Way. All four of these are technically my ‘home’ in varying degrees, so they match the idea of a ‘special place’. I think that using these kinds of images will allow me to create several different styles of music and be able to vary the music in a number of ways such as tone colour, instruments used, texture (PGG20120723).

The parameters of the PMP, with multimodal meaning creation at the fore, shifted the focus away from the linguistic mode and disrupted Galaxy Girl’s traditional way of designing, forcing her to adapt her project to allow for a heavier focus on creating in the audio mode. As the task was designed to explore what the audio mode could offer within a multimodal text, it privileged the process of audio meaning-making and
creativity within the audio mode. The restrictions put in place were devised to allow students to focus on the creation of the audio mode. Even so, Galaxy Girl still structured her PMP around the visual mode, which she would then accompany with the audio mode.

In Lesson Six and Seven, Galaxy Girl began to create the visual and linguistic components of her PMP using Windows Movie Maker.

I’ve compiled a number of pictures of the Milky Way Galaxy, the Earth and Australia. After inputting all of the pictures as well as the title slide, the movie went for 3 minutes, 50 seconds. I lengthened the pictures time on the slide to about 10-15 seconds each, but I will probably adjust these times later when I do my narration to fit what I am saying (PGG20120727).

Galaxy Girl identified the work that she was doing as a task that was not typical for an elective music class. Her experimentation with the interrelationship between the visual and linguistic elements and the mode of time convey a new way of thinking for Galaxy Girl in the context of the Music elective. She recognised this paradigm shift in her comment to a visiting international student below.

We’re not really doing any music stuff today, which is quite weird…it’s music and we’re not doing anything music related (VGG20120727).

Galaxy Girl had an expectation that within music lessons she would be working predominantly within the audio mode, suggesting that a focus on multiple modes has facilitated new ways of thinking within the Music elective. The multimodal meaning
elements of the tasks encouraged Galaxy Girl’s engagement in the active knowledge making affordance and reflection demonstrates metacognition where she acknowledges the deviation away from her preconceived understanding of Music elective learning experiences. She recognised that the visual work would be followed by work in the audio mode.

Once I make the video, I have to make music for it. That’s pretty cool! Music for the background (VGG20120727).

Her assessment of the audio mode as ‘the background’ implies that the visual and linguistic modes will be the salient aspects of her PMP even though this is a Music elective. Galaxy Girl compiled her visual and linguistic content using Windows Movie Maker as seen in Figure 5.1. This figure shows Galaxy Girl’s computer screen as she manipulates her still images and title screens into a movie, which enables images to be assembled on a timeline at the bottom of the screen. It shows a preview screen of the timeline where the length of each slide can be adjusted to suit preferences. This software enables the user to make deliberate creative decisions using the scale of time and embedding the visual and audio modes.
Figure 5.1 Galaxy Girl’s Windows Movie Maker screen in Lesson Six & Seven

Galaxy Girl utilised the same order of construction, that I had undertaken in my sample PMP, by creating the visual and linguistic content first and then creating audio to accompany the visual. A visual outline of her PMP can be seen in Figure 5.2, which shows all of the screen captures in the order that Galaxy Girl used in her PMP.
Over the weekend after Lesson Seven, with the visuals and some of the linguistic mode complete, Galaxy Girl again accessed the linguistic mode. She made voiceover notes for a narrator, which were particularly detailed showing a depth of knowledge of her topic as seen in the portfolio extract below.

The Milky Way

- Galaxy, Earth exists within.
- A galaxy is massive, gravitationally bound system consisting of stars, stellar remnants, gas, dust, dark matter.
- It is a barred spiral galaxy.
- Approx. 100,000 – 120,000 light years in diameter.
- Contains approx. 200 - 400 billion stars and at least as many planets.

- Solar system located two thirds of way out from galactic centre- near inner edge of spiral shaped concentration of dust and gas known as Orion-Cygnus Arm.

- stars of inner 10,000 light years (approx.) of galaxy are arranged in bars and a large bulge... (PGG 20120728).

Despite planning to incorporate the linguistic mode through a narrator, Galaxy Girl ended up not using any spoken words in her PMP. Rather, she used some title screens to ‘set the scene’ and make her PMP title ‘Into the Galaxy’ appear a bit ‘like Star Wars’ (CGG20120910). The parameters of the PMP had disrupted Galaxy Girl’s preferred way of creating a multimodal text. She had to adapt her process to cater for the shift in focus to the audio mode. Her creation shifted from the solely linguistic to incorporating both the visual and linguistic modes with little detail about the audio mode shared up to this point.

Galaxy Girl explained her personal connection to her PMP and described how it would be presented as an informative film.

  My film doesn’t exactly have a story. It is more like an informative film about the areas I live within on varying scales of size (e.g. Solar System, Earth, Australia, Sydney). It plays on the theme of a ‘special’ place by stating that the entire galaxy is my special place, and my position within it. It is personally meaningful through its informative nature rather than creative and connects with me through my love of space related stuff (PGG20120803).
Galaxy Girl was engaged by the opportunity to be creative in an area of interest. The *multimodal meaning* elements facilitated the opportunity to represent a concept without the reliance on a linguistic form of explanation. She explained that her new idea no longer had a story but her love for her topic motivated her throughout the unit of work, as can be seen in the following answers to reflection questions provided towards the end of the unit.

**How important is it that this project is about yourself and your identity?**

It’s really important because this is what motivates me to work hard. Seeing as this project isn’t being marked, the fact that this is about self-expression means that the marks don’t matter. It is an expression of self-interest – a project that allows us to immerse ourselves in the things we love and express them through visuals and audio. (PGG20120914).

The enthusiastic tone of the above reflection establishes that the PMP facilitated a unique opportunity for Galaxy Girl to draw upon interests, express herself ‘through visuals and audio’, and engage in a process of creative self-expression within the classroom context. As this task was not part of the students’ overall formal assessment, the completion of the project was motivated by student interest, rather than the pressure of attaining numerical grades. She demonstrates *metacognition* as she self-assesses the value of the task in immersing her in a creative process that facilitates a representation of her personal interests.
5.3 Creating meaning in the audio mode

After completing the visual component of the PMP the next step for Galaxy Girl was to export the video from Windows Movie Maker and import it into Cubase. She was the first student to complete this task and encountered initial technological difficulties with the format of the video and its ability to be played in Cubase. After 15 minutes, ‘a pretty long time’, this was successfully overcome (PGG20120801). Galaxy Girl’s Cubase project was now setup and ready for her to create the audio for her video. Figure 5.3 shows Galaxy Girl’s empty Cubase project with only the video window present in the bottom left hand corner.

![Figure 5.3 Galaxy Girl’s initial Cubase project window (VGG20120801).](image)
The Cubase project screen features that are visible in Figure 5.3 are the video player (bottom left hand corner), the track editor in the Arrange window (the multi coloured tracks down the left-hand side of the window for editing midi and audio), the timeline (across the top of the Arrange window for showing location of the video in bars and beats or in minutes and seconds), and the transport bar (like an old-fashioned tape recorder for playing, recording and stopping the video).

5.3.1 Early audio work

Lesson Eight was the first time Galaxy Girl had been able to explore the audio within Cubase with her video. She was not very familiar with the software and provided a running commentary about her progress on her video observation.

What does this mean? Look at all these words I don’t understand...It's working...I'm pretty pro at this (VGG20120801).

In this video observation, Galaxy Girl initially spoke aloud as if she was unaware of what to do but she was very quick to work out how to use one of the midi tracks in the arrange window to get sound from Cubase.

Now what do I do? What spacey sounds...? How do I change the instruments on this? (VGG20120801).

Galaxy Girl quickly discovered the patch selector and navigated to the chromatic percussion instrument, the celesta, as seen in Figure 5.4.
Figure 5.4 Galaxy Girl’s Cubase arrange window featuring the patch selector on the left-hand side.

After experimenting with pretty much every instrument on Cubase, Mr V asked me what kinds of music I hoped to produce with this film. The details on how I do it are still vague; however, I want to begin the film with something dramatic and loud, hopefully orchestra. From section to section (galaxy -> Solar System -> Earth -> Australia -> Galaxy again) the music will change notably (somehow). This is how far I got today (PGG20120801).

Galaxy Girl experimented with the many different instruments and was very impressed that she had so many instrument choices to explore, ‘it sounds just like a Music Box’
She tried out the many different sounds including the sound effects: in particular the ‘laugh’ sound effect. ‘The whole video is just going to be laughing, haha’ (VGG20120801). This lesson gave Galaxy Girl the opportunity to hear the many different tone colours that were available for use in the creation of the audio mode. The girls were using a General Midi sound bank that featured 127 different sounds from real instruments such as the piano, violin, trumpet and saxophone to electronic synthesizer sounds and effects. The technological tools provided them with many choices regarding their audio content, meaning this was an efficient way for students to gain exposure to and sample a variety of audio meanings.

Explaining initial audio ideas

Completing the visual elements of the PMP helped Galaxy Girl to focus her plans for the audio mode, as it gave specific points of reference within the PMP to accompany. In Lesson Nine, I asked Galaxy Girl to explain her ideas for the audio mode of her PMP to me. The discussion unpacked her musical and multimodal influences and how she planned to use them to create audio in the PMP.

Galaxy Girl: I play lots of video games…there’s a game called ‘Halo’, which is set in space…they’ve got lots of orchestral stuff going on. They have lots of choirs. So, I was thinking that I could do something like that.

Mr V: Like a choir?

Galaxy Girl: Yeah, kind of. Like voices.
Mr V: Voices. Do they sing words or…?

Galaxy Girl: No just like ‘Aw aw aw aw’

Mr V: Okay. So, like synthesized voices.

Galaxy Girl: Yep, probably just synthesized. And I want to do something in the lower register as well. For the spacey bits, because I just think it would sound better in the lower register.

Mr V: Okay, so is this for the outer space scenes?

Galaxy Girl: Outer space, yeah. And then, I’m thinking when it has pictures of the galaxies it will be lots of low register instruments and very big, and dramatic and the textures are quite high. With lots of orchestral sounds and drums.

Mr V: Or percussion, rather than drums? Are you thinking bongo or congas? Tribal?

Galaxy Girl: Not really just like…

Mr V: Timpani?

Galaxy Girl: Timpani, yep. That sounds good (CGG20120803).

In this discussion excerpt, Galaxy Girl describes how she plans to use similar ideas from the multimodal video game ‘Halo’ to accompany two specific visual scenes.
within her PMP. She explains how she would like to compose something utilising synthesized voices in a low register for the outer space parts of her PMP, and something utilising percussion for the galaxies section. In the first of many rapid-fire discussions, she was able to articulate her ideas by drawing on the prompts that I provided demonstrating recursive feedback and collaborative intelligence. She planned to accompany her choir part with dramatic orchestral music and the timpani drum. This discussion was improvisational in style where neither of us had preconceived ideas of what to expect. It conveys that improvisation is key to educators when enabling meaning in the audio mode as I had to react in the moment and respond quickly to the cues given by the student, emphasising the importance of the differentiated learning environment.

This rapid, improvisational style of discussion led Galaxy Girl to develop her metalanguage to describe the audio within a multimodal context. She became acutely aware and conscious of the creative process, gaining a deeper understanding of what was occurring within the audio mode. The following discussion excerpt utilises familiar audio influences that she has already considered and helps her to unpack them further.

Mr V: …that video game one is a great influence, because what have you taken from that? You’ve taken sounds, you’ve taken the choral sounds, the choir…

Galaxy Girl: Yes.

Mr V: You’ve taken that they’re not singing words.
Galaxy Girl: Yep.

Mr V: What sort of pitch is it? Is it high pitched or low pitched?

Galaxy Girl: Low pitch.

Mr V: Low pitched choral singing. So, is it male voices?

Galaxy Girl: Yep. Tenor?

Mr V: Ok, tenor and bass maybe?

Galaxy Girl: Yep.

Mr V: Alto’s? Low altos maybe?

Galaxy Girl: Um. No, it's very low.

Mr V: It’s very low, is it?

Galaxy Girl: Not very low, lower…

Mr V: Lower?

Galaxy Girl: Lower than alto.

Mr V: Ok. Lower than alto. And is it major or minor?
Galaxy Girl: Ugh…kind of minorish, majorish.

(CG20120803).

This excerpt demonstrates the coaxing of descriptions about Galaxy Girl’s audio influences through my rapid questioning in the early stage of the MEMTU. The audio elements are revealed by her use of musical terminology, as well as the linguistic use of the suffix ‘ish’ to describe the tonality; conveying a level of uncertainty regarding some elements of audio analysis. The metacognition Galaxy Girl engaged in during these learning conversations facilitated pathways into new metalanguage and solidified prior understandings of audio content. These moments provided strong openings for teacher collaboration, intervention and further questioning.

Mr V: Okay, so it changes between major and minor. And are they singing long sustained notes or are they…

Galaxy Girl: Longer.

Mr V: Yes. And is it in 3/4 or 4/4? Fast tempo? Slow tempo.

Galaxy Girl: It’s quite slow.

Mr V: Okay, so it’s slow. Is it just voices? Or is it accompanied by something?

Galaxy Girl: In the beginning it’s not accompanied by anything but as it goes on…
Mr V: It starts getting accompanied.

Galaxy Girl: Yeah.

Mr V: So, they start singing something unaccompanied and then like a rhythm section or something comes in with it?

Galaxy Girl: Yeah.

Mr V: Okay. That’s a good guess from me. Do instruments come in?

Galaxy Girl: So yes, it’s like, no kind of, not really. Instruments gradually appear (CGG20120803).

By utilising moments of student uncertainty, the teacher questioning calls on Galaxy Girl to think about the audio mode in her influences in ways that she had not previously been required to put into words. The recursive feedback increases the clarity achieved when describing the audio mode using appropriate metalanguage in relation to register, tonality, tempo and the voice type used.

*Audio to align with visual and other influences*

The visual mode drove Galaxy Girl’s creation of audio content in her PMP as she drew on her audio influences to compliment the visual mode. Galaxy Girl selected influences that easily related to her PMP.
Mr V: So, in terms of these pictures up on the screen, where do you think [the voices] are going to change? How long are you going to have the voices playing for?

Galaxy Girl: The voices until...probably until we zoom in a bit closer to Earth which is...

Mr V: Is there a particular image or spot where the music needs to change?

Galaxy Girl: Yeah, well it just kind of changes... and then it’s got like Earth, and this is Earth and gets like closer and closer. So, I want to make it change as it gets closer. I want to change the instrument playing. It just looks really tranquil. I don’t know. Pretty, starry.

Mr V: So, really soft?

Galaxy Girl: Yep. Soft, silent, and no percussion...

Mr V: And silent, and no percussion?

Galaxy Girl: Well not silent, you need something.

Mr V: One instrument, thin texture? High register or low register?

Galaxy Girl: Um high, that’s why I’m thinking of having a flute or something just playing by itself.
Mr V: So, you are not thinking about the bassoon out of the Rite of Spring that we heard?

Galaxy Girl: Bassoon? No, ha ha.

Mr V: No? Okay.

Galaxy Girl: Well, maybe?

Mr V: Do you know how it started off solo at the beginning?

Galaxy Girl: Yep. That could be where it came from (CGG20120803).

This discussion excerpt examines the relationship between Galaxy Girl’s creation of audio content in relation to the visual. As Galaxy Girl complimented the visual mode with her audio content she planned to synchronise the changes of audio with the changes of visual content, for example, ‘I want to make it change as it gets closer’. The questions prompted greater detail about Galaxy Girl’s ambitions in terms of dynamics (soft), instrument (flute), tonality of the harmony (major and minor), register (high), structure (silence), and texture (thin, just one instrument). Whilst she made many specific connections between the audio and the visual modes, further unpacking of ideas was evident within Galaxy Girl’s portfolio over the next few lessons. I suggested as to what she could experiment to create some musical material from her influences.
In the following discussion excerpt, Galaxy Girl continued to build her capacities to describe the audio mode using music terminology and how it connects to her visual content for the zoomed in Earth section.

Galaxy Girl: As you zoom into the Earth itself then the music changes to something brighter, I’m hoping.

Mr V: Okay, so what have you thought about for the brighter music?

Galaxy Girl: Something like, high register obviously. I want to use woodwind instruments, like flutes.

Mr V: And what sort of things are they going to play?

Galaxy Girl: Like airy melodies, that sounds bad.

Mr V: No, that doesn’t sound bad. So, is there something that you’ve heard that you think you want to make your flute sound like? Is there a particular style of music or a particular song that you’ve heard?

Galaxy Girl: Style?

Mr V: Okay, because what I’m trying to set you up for is that you find a style of music or a song or something that sounds like what you want yours to sound like. Then you can analyse that song so that you analyse the music, the pitch, the duration and the texture. And then you apply that to your version, your melody that you’ve come up with.
Galaxy Girl: Okay. Yeah (CGG20120803).

Galaxy Girl was searching for adjectives to describe how she wanted the flutes to sound and settled on ‘airy melodies’. She recognised that this was not a good use of musical terminology, but it did have meaning for her in this context in relation to the visual mode. As the teacher, recognising when to correct the music terminology and when to allow the linguistic mode to accentuate the personal meaning is key in boosting confidence in student multimodal decision making. Galaxy Girl was still a little unsure of the way in which the music could be unpacked and then used to create meaning in her new context. At this point, I drew her attention to the previous analytical work (describing the pitch, duration, and texture) to utilise when unpacking her influences that demonstrate similar meanings to those within her PMP. I focused this *recursive feedback* to respond at her point of need, reflecting *differentiated learning* in the composition process.

Making musical metalanguage

The previous discussion explored the initial audio decisions. This section will explore the development of musical metalanguage through the analysis of audio influences.

Galaxy Girl reflected in her portfolio how she was able to draw upon her musical influences for creating in the audio mode. This example of a musical influence comes from a multimodal text, being the video game set in space, ‘Halo’, mentioned earlier.

After analysing a song from video game series ‘Halo’, I gained some inspiration for the kinds of music I’d like to use, particularly in the spacey parts. I think I’d like to be
using instruments such as the piano, clarinet, violin, cello, flutes and some other classically orchestral instruments. The texture would most likely swell and then diminish throughout the piece, starting thin and ending thin. I hope to make it a fairly legato, smooth flowing piece, but not exactly gentle and slow moving. These ideas will probably change over time (PGG20120807).

In this portfolio extract, Galaxy Girl demonstrated the ability to use more formalised music terminology in her analytical work, interestingly, as a result of writing in the linguistic mode rather than through verbalising her ideas. Firstly, Galaxy Girl identified instruments that she would like to use. Secondly, she utilised musical terminology to describe how the texture would change in her example. Finally, she referred to articulation, being legato (the Italian word for smooth), and tempo (the speed of the beat within the piece). This portfolio extract demonstrated a development in the sophistication and detail of her musical terminology than evident in our previous discussions.

Galaxy Girl also reflected on the audio from a multimodal web comic as an influence for the Earth scene.

For the Earth scene, I’ve been thinking about using a more modern style of music. I’d like to use the pentatonic scale for this particular section, especially after listening to ‘Princess of Helium’, instrumental song from Volume 1 of the web comic ‘Homestruck’. It’s a very simple song played solely on the piano in a pentatonic scale (mostly). It has one simple phrase that is repeated 3 times with increasing texture each time that gives off a somewhat desolate, majestic and mysterious tone through
its eerily resonant qualities, minor sounding notes and its use of long pauses and long notes (PGG20120807).

In this portfolio excerpt, Galaxy Girl utilises multimodal meaning in both descriptive language (desolate, majestic, mysterious, eerily) and musical terminology (minor, pauses, pentatonic scale) to describe the character of the song. This demonstrated the beginnings of the metalanguage that she would use to describe the audio mode in a multimodal context. Galaxy Girl’s ability to initially separate the audio influences and use language to describe their meaning, culminated in a creative process whereby she composed her audio, incorporating the musical elements previously analysed, in creating her preferred mood. The impact of the influence of her deep engagement with personalised multimodal content is a strong motivating factor in her creative process.

Learning through experimentation

Galaxy Girl created her melodic material through experimentation with the available midi instruments and demonstrated the value of student trialling of new or unfamiliar technological platforms when creating. Her creations did not always eventuate quickly, but she was able to link them to possible influences using her developing audio metalanguage as this portfolio excerpt shows.

Today I played around with instruments again for most of the lesson...The only thing I really achieved today was to create a short phrase using the pentatonic scale on the celesta in a very high register. The phrase has no distinct time signature and consists of descending and then ascending of notes C#, A#, F# and later A#, F#, D# (pentatonic scale in F# major). I may have gained some of my inspiration from the opening of ‘La
Fille aux Cheveux de lin’ by Debussy (as in a lot of inspiration) as I begin with a long, clear first note which speeds up and mixes with the other notes before slowing down again. I tried to use this phrase to set a certain calming, eerie and lonely atmosphere for the images. I tried to imagine how stars would sound like when picking the register and instrument for phrase (PGG20120807).

This portfolio excerpt explores the first musical idea that she composed for her PMP. Her idea drew heavily upon the composition by Debussy, ‘La fille aux cheveux de lin’. This influence is a classic from the piano repertoire typically found in the Music elective, unlike the previous multimodal influences. The Debussy can be heard here https://www.youtube.com/watch?v=jGSZPRk6aXA. Galaxy Girl described this phrase using non-musical vernacular (calming, eerie and lonely atmosphere) and also justified her choice of register (pitch) and instrument (celesta) by relating them to her personal interpretation of what stars would sound like. The meanings of the visuals within the PMP impacted on her description and creation of audio. Galaxy Girl attests to the wide variety of influences of the audio mode in student work, her influences are not limited to one genre or mode. Her work in progress can be viewed here https://vimeo.com/182647763 (password: michaelphd)

In Lessons 11 and 12 Galaxy Girl made considerable progress with the audio mode for the Earth section of her PMP, evident in the portfolio excerpts below.

I’ve decided that I’d like to stick with the idea of the pentatonic scale for the Earth bit because it certainly reflects the dainty and sweet yet somewhat mysterious mood I’m trying to get across with the images (PGG20120810).
Galaxy Girl made the connection between the tonality of the music, using the pentatonic scale (a scale consisting of five musical notes), to the character of the music, ‘dainty’, ‘sweet’ and ‘mysterious’, again demonstrating to the power of the linguistic mode to aid student description. She then unpacked in detail what was happening in the music.

The first thing I decided today was that, although I wanted to start the texture off very thin in the beginning of the Earth section, one line of broken time signature-less pentatonic triads was a bit weak and lacking. From here, I created a bit of an accompaniment to the broken chords using only long, extended, singular line notes. I used the note C# in the same register as the celesta part in a piano at first. This singular note carried on until the end of the C#, A#, F# phrase. I did the same thing again in the A#, F#, D# phrase using an extended A# this time instead. When the phrases came around again, I merely repeated what I’d done, changing the ending slightly in the new line to lower to a G# at the very end of the phrase briefly (PGG20120810).

In this portfolio excerpt, Galaxy Girl articulated her process of adding an additional layer to her first idea. She described the musical material in more detail in terms of the pitch content and how she adjusted her new sustained line to move in synchronisation with the harmonic changes. The detail given was almost enough to notate the example using traditional notation, apart from the lack of rhythmic information. Galaxy Girl refined her choice of instrument to reflect the mood more acutely in line with her intended meaning, as can be seen in the following portfolio excerpt.
I decided after this that the piano wasn’t a good choice for this particular line and didn’t really carry through the piece the way I wanted. I wanted to have a warm, legato and airy kind of sound for this part so it wouldn’t drown out the broken chords and to create a gentle, calming and smooth moving/flowing atmosphere. At first, I turned to the pipe instruments where I almost chose the whistle as the proper instrument. In the end, however, I decided that I preferred the warm pad, with its soft and gentle sounding tone and legato movement between notes. After this, I dimmed the sound in this line a bit (after Mr V taught the class how to) and made the dynamics in the broken chord section a bit louder and more regular (PGG20120810).

In this portfolio excerpt, Galaxy Girl highlighted the atmosphere that she was trying to create as the reason for selecting a particular instrument. She used subjective descriptive language alongside musical terminology to describe the atmosphere and the musical elements that create the atmosphere. Galaxy Girl also commented on her use of the volume slider to adjust the volume levels of each part within her project and utilise the technology available within Cubase to add to her audio compositional techniques.

To accompany the next set of images in the Earth section, Galaxy Girl added an additional part that utilised the same notes but with a more definitive rhythm and metre, as can be seen in the following portfolio excerpt.

After this, I wanted to use similar broken chords but add a distinct time signature and rhythm. In the end that was exactly what I did. In the same register, I used the same broken chords and put them in a 4/4 time signature with an ostinato quaver rhythm
as follows: . I changed the placement of the notes slightly and added a 3rd chord in the last bar of the first phrase ([there are] 4 bars in a phrase) that consists of C#, F# and D#. The phrase looks like this [notated as note names not on the musical staff in her portfolio]:

This was played on the harp, but I’ll probably end up changing the instrument later to something that rings out a bit more. I want to use an instrument that can contrast definitely with the introduction, but I want something that is still quite sweet and a bit melancholy (PGG20120810).

This excerpt shows how Galaxy Girl was able to use musical terminology and a clear form of musical notation to record her ideas within her portfolio. Like Cinderella and Brigitta (who we meet in Chapter Six and Seven), some of her audio content was created using the pentatonic scale built on F#, (all of the black keys on a keyboard) which had been studied in class earlier in the year. She utilised musical terminology in articulating the definitive pulse as opposed to the free rhythm accompanying the earlier images of the Earth section. Galaxy Girl’s use of language to describe her instrument choice utilises descriptive but subjective terminology, ‘quite sweet’ and ‘a bit melancholy’. However, the language appears to represent her image of the sound. This section of Galaxy Girl’s work can be viewed here https://vimeo.com/182647993 (password: michaelphd).

It can be seen that Galaxy Girl was rather hesitant and required some guidance with describing her examples in her early audio work. As we move into the middle stage of her Phase Two work, she has developed much more confidence and is able to utilise

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musical terminology and other adjectives to describe her influences and her own work. This exemplifies the power of scaffolded discussion, *recursive feedback* and *collaborative intelligence* to facilitate a movement of understanding from the surface to one of greater depth in cognition and suggests that when guided effectively students will have the potential to move through the layers of *multimodal meaning*, acquiring metalanguage and becoming equipped with the skills necessary to compose meaningful creative PMPs.
5.3.2 Middle stage audio work – Galaxy Girl’s use of metalanguage flourishes

As the MEMTU progressed, Galaxy Girl became more confident and detailed when describing her audio mode and the decisions behind why she had created it this way. In Lesson 13, she not only responded to the questions asked but added additional information by describing what each layer was doing as she spoke about them.

Mr V: Okay, so what instruments did you use?

Galaxy Girl: Um, celesta or something in the top.

Mr V: Okay, celesta.

Galaxy Girl: And it didn’t really have a time signature in this first... in the intro. It just kinda...

Mr V: Okay.

Galaxy Girl: And here’s like a whistle, no it’s not, it used to be.

Mr V: A warm pad.

Galaxy Girl: Yeah, a warm pad, and that’s like really quiet underneath this.

Mr V: Yes.
Galaxy Girl: Oh, and I’m using the pentatonic scale for this part, I don’t know why, I sort of just am.

Mr V: Okay, and that is creating that very atmospheric sort of sound, the pentatonic scale.

Galaxy Girl: Yeah, it’s sort of soft and gentle.

Mr V: Gentle. Okay, reminiscent of anything in particular?

Galaxy Girl: Um.

Mr V: Maybe something we studied in class earlier in the year?

Galaxy Girl: Yep, modern art music, like the Sunken Cathedral, the Debussy. (CGG20120815).

In this discussion excerpt, Galaxy Girl shifted from just identifying instruments to identifying rhythmical features (time signatures) and pitch features (the use of the pentatonic scale) that justified her non-musical descriptions. Galaxy Girl also made the connection between her work and another piece studied earlier in the year by French composer, Debussy. Her metacognition skills continue to develop and enable her to move to a greater depth of analytical and personal understanding of her PMP. Her work at this stage can be viewed here:

https://vimeo.com/182648384 (password: michaelphd)
At this point in the MEMTU Galaxy Girl demonstrated increased competency with using metalanguage to describe the reasons for her compositional decisions. Her decision-making was based on the atmosphere and mood that she was trying to create in her PMP and reflected in both the visual and the audio modes. This reflection from her portfolio occurred following a teacher prompted ‘What is working well’ posed to the class.

The reason I chose to include this line in my composition was to create a somewhat eerie and desolate, yet sweet sounding and elegant kind of sound beneath the clear melody line of the broken chords. I accomplished creating this kind of sound, I think, through the low pitch of the soft, legato strings playing a slow moving rhythm which contrasts quite well to the more disjointed, fast-paced and high pitched rhythm and melody of the harp line...I found, however, that the vibraphone didn’t mix very well with the harp in the melody line, so I switched the instrument there...Through the use of a fast, constant rhythm, a high register, clear and distinguishable and resonant notes in this particular musical line I aimed (and succeeded I think) in creating a bright, crisp and ringing sound, and an atmosphere of mystery, gracefulness and, to a degree, loneliness too (PGG20120815).

This portfolio excerpt shows Galaxy Girl’s reflections that connect the audio mode to the illustrative atmosphere she was trying to create in her PMP. She was able to utilise detailed musical terminology to describe the process of her audio content creation and decisions and then evaluate the reasons for success in achieving the intended meaning of the atmosphere. She was aware of the role and sound of each individual instrument (e.g. strings – low pitched and legato) and how they could interact with each other to add to the audio meaning. Her decision to switch instruments for the original harp part
to a vibraphone shows how she is able to refine her ideas through the process of reflection. Her audio mode is an ongoing creation that involves much trial and error in creating the desired meaning. Her work can be viewed here:

https://vimeo.com/182648384 (password: michaelphd)

In Lesson 16 and 17, Galaxy Girl ‘decided to work more on the introduction…instead of the Earth scene’ (PGG20120824). She had some clear intentions for what the opening scene needed to do to establish the character of the PMP right from the start.

I hope to begin the piece with a thin texture as I introduce the context and setting of the video (once I add the audio) that would then build up as the video progressed. I also wanted to start the piece in a fairly low pitch range and in a minor key to create a somewhat menacing, suspenseful and grand tone, reflecting the ideas I want to get across about the mystery and magnificence of the galaxy. (PGG20120824).

Galaxy Girl made connections between the low pitch, minor melody and the menacing and suspenseful tone she was hoping to achieve. This was the way she hoped to convey the mystery and magnificence of the galaxy through the audio mode. When experimenting with new musical material Galaxy Girl drew upon her analytical work to try to recreate the desired meaning. This attests to the value in students focusing on the audio mode within multimodal texts and valuing it at the forefront of analysis and composition as it evidently provides a depth of meaning and mode for experimentation.

Our discussion explored some suggestions as to what notes could be played to achieve Galaxy Girl’s intended multimodal meaning. After hearing Galaxy Girl’s opening
section, I provided her with *recursive feedback* and helped her to unpack the audio mode by describing what she has done using musical terminology.

Mr V: Let’s have a listen and hear what it sounds like with the voices.

Galaxy Girl: It sounds a bit weird.

Mr V: It sounds great.

Galaxy Girl: It’s just...

Mr V: What I would be thinking of now is how you could thicken those ideas up, I think it’s very clear that you’ve got a nice chord progression in there, what is it A minor to F or something like that.

Galaxy Girl: Something.

Mr V: (Plays a bass ostinato). What about something like this underneath, maybe not with this synth sound, but underneath you could have like a driving orchestral sounding thing underneath. So, you’ve got options to add to that.

Galaxy Girl: Yep.
Mr V: So, you seem to have that repetition happening in the piano and the nice melody with the long-sustained chords. So, you’ve basically got everything you just need to orchestrate it to make it sound epic.

Galaxy Girl: Yep.

Mr V: (Demonstrates some strings). Plus, you’ve got some low sounding percussion you could add as well (CGG20120824).

This discussion illustrated how Galaxy Girl and I worked together as a team towards creating an ‘epic’ (Galaxy Girl’s earlier description of what the music should sound like) introduction and is an example of collaborative intelligence between the teacher and student. I drew upon her ideas from an earlier discussion to create a thick and ‘epic’ sound and demonstrated some different ways to achieve this in practice on the keyboard using a bass and then strings sounds.

Galaxy Girl refers to a number of overlapping melodies and how she hopes to create these to build up the texture. She begins to apply some of these ideas in Lesson 18. As her video approaches the next image she ‘wanted to get this bit [the big climax] in time with the image change’ (CGG20120827). Her work from Lesson 18 can be heard here: https://vimeo.com/185101552 (password: michaelphd).

Galaxy Girl continued to work on the opening section of her PMP in Lesson 19. Through discussion, Galaxy Girl and I rapidly interchanged thoughts exploring her idea to add a percussion part to compliment the changing visual images. This discussion was initially a response to a technical request to locate the midi drum
sounds, but Galaxy Girl made a link to the unusual rhythmic accents from Stravinsky’s *The Rite of Spring* that we had studied earlier in the year. This connection was evidence that she remembered musical repertoire, which was studied earlier in the year in the unit *Art Music of the 20th and 21st Centuries*. Her ability to make connections to prior knowledge with minimal prompting gave me a clearer understanding as to what she would like her idea to sound like, as I was familiar with this piece of music, unlike her other influences from computer games and a web comic. I was able to use music terminology (repeated quavers with a constant pulse) to describe the part she was referring to. Galaxy Girl recalled the unusual rhythmic accents from *The Rite of Spring* and wanted to incorporate that into her audio content. The discussion continued to shift focus as I questioned how these new ideas were going to align with the visual content. Galaxy Girl explained what her plan was for the audio mode to align with the visual mode, adding complexity in meaning, before we then shifted focus again to respond to her initial question about how to find the drums and demonstrated some of the sounds for her. This discussion is representative of the unprompted learning that occurred from Galaxy Girl’s question about the technical components. I intentionally focussed the discussion on the multimodal dimensions of the task, which led to richer learning in compositional techniques and meaning-making, while also addressing the specific query.

Her work can be viewed here:

https://vimeo.com/185107245 (password: michaelphd)

Throughout the middle stages of the MEMTU it is clear that Galaxy Girl had become more fluent and confident with unpacking her influences. She developed her use of metalanguage to a high level that clearly explains the audio mode and its interactions.
within the *multimodal meaning* creation process. In this stage, teacher scaffolding encouraged her to delve deeper into her analytical work and experiment with her ideas more thoroughly. The seven pedagogical affordances are prevalent throughout this section of the work.

### 5.3.3 Later stage audio work – Galaxy Girl achieves independence

As the MEMTU progressed Galaxy Girl became more confident in her music composition abilities and in the later stages, was able to achieve independence from teacher led conversations and utilised metalanguage without prompting to describe the audio mode. This portfolio excerpt is an example of how she was now able to self-critique and did not need to seek the teacher’s approval of her work.

After hearing the results of the previous melody and not liking it, I decided that this new melody would have to be simpler and not too chord heavy (in the beginning at least). After some experimentation, I decided on the following 12 bar melody:

![Melody notation](image)

The melody was going to be played in a register just below that of the choir melody part. I chose to use the viola for this part, as it produced a warm, elegant and majestic sound that was not overpowering or forced like the cello was. I think it suited the long-sustained notes in this melody part well too. This melody in the viola part, I believe, brought out a kind of lonely, yet elegant and strong tone through the use of long, sustained notes with smooth transitions, the use of minor notes and chords, the viola’s thick, warm sound and the melody’s placement in relation to the rest of
the piece. I also tried to provide an escalation in texture and dynamics, as is evident in the 4 final bars, to go along with the build-up of texture and dynamics in other parts too (PGG20120907).

By this stage, Galaxy Girl was able to use audio metalanguage to make strong connections between how the music made her feel using musical terminology. She connected ‘kind of lonely, yet elegant’ with ‘strong tone’ and described the viola part as sounding ‘thick’ and ‘warm’. These descriptors are rather subjective yet when combined with the musical terminology of ‘sustained’, ‘smooth’, ‘minor’, and ‘build-up of texture and dynamics’ are able to provide a clear picture of the audio mode within the context of her PMP.

In the later stages of the MEMTU, Galaxy Girl was much more confident in her abilities to engage with her influences. She worked independently to unpack and reassemble her audio influences. Referring to a rock genre piece by Daft Punk, she used both musical (legato-like, synthesized, sustained) and non-musical (gentle, neat, brighter, futuristic, sci-fi, easy going atmosphere) terminology when describing how the music sounds. She was able to identify particular elements from these examples using musical terminology (strong melodies and chord progressions…in a similar register).

I also add the first percussive line of the piece to this particular phrase. Using the ‘drums’ midi, I came up with the following rhythm for the 4 bar phrase:

\[
\begin{array}{ccccccc}
\underline{\text{4}} & \underline{\text{4}} & \underline{\text{4}} & \underline{\text{4}} & \underline{\text{4}} & \underline{\text{4}} & \underline{\text{4}} \\
\end{array}
\]
I used a muted kind of drum and a synthetic clapping sound for this rhythm represented by the \( \text{\textcolor{red}{\text{\textbullet}}} \) and \( \text{\textcolor{red}{\text{\textbullet}}} \) notes respectively. By using these instruments, I wanted to create something representative of the techno or electronic genre, as I had done with the use of the rock organ previously, to create a futuristic, science-fiction-like atmosphere. (PGG20120907).

In this portfolio excerpt, Galaxy Girl explained her influences for her first percussion part. In conveying a ‘futuristic, science-fiction-like atmosphere’ she clearly articulated the rhythm, tempo, and tone colour of her drum part and how this part interacts with the sustained notes of the organ. She had become much more proficient in the creative process making clear connections to her influences from Daft Punk. Her work at this point can be viewed here:


Galaxy Girl had also begun to recognise the similarity of her previous musical ideas within her PMP, with them predominantly commencing on beat one of the bar. For the second last image of the Earth section she created something more syncopated as seen in the following excerpt.

![Musical notation](image)

The use of quaver rests at the beginning of each bar was a deliberate choice made by me in order to emphasize the beginning of each long sustained chord in the strings part before jumping into the phrase’s melody (PGG201208907).
This idea was unique for her PMP, as her other musical ideas had all started on the beat and featured regular rhythmical accents in comparison to this new syncopated idea. Despite the heavy focus on creating audio as part of the multimodal, Galaxy Girl was still able to create variety in her music compositional techniques. Her descriptive language also grew in sophistication as she used it to describe her audio creations. Galaxy Girl’s portfolio reflections and composition process reflect the value of focusing on the audio mode in multimodal text creation, as she demonstrates a rich engagement with complex audio elements, terminology and analytical skills.

As Galaxy Girl approached the end of the MEMTU she was able to demonstrate a good structural awareness of her PMP and look for ways to establish unity, as can be seen in the following portfolio excerpt.

I also worked on the final phrase of music that would play over the final image of the earth section. I wanted to create a kind of reference to the previous melodies and rhythms within the Earth section closer to the beginning. I decided to use the following melody (again) after some experimentation:

The melody is played in a fairly high register, as it had been played previously in the piece, however it has an increased tempo (so I am able to fit both the bars into the time the image is on screen for). I also used the celesta instrument for this part as I had previously (PGG20120907).

As Galaxy Girl finalised the Earth section by referring back to a previous musical idea, she modified the idea by playing it at a faster tempo to synchronise with the visual
image. Her music compositional techniques repertoire was being incorporated into the creation of the audio mode within her PMP with the melody being used at double the tempo.

I really want the Earth section to end with a gradual decrescendo in tempo and texture into silence. I tried to incorporate this desire of mine by slowing down the ending to the phrase a bit and [am] planning to keep the texture relatively thin. I’d hoped to create an atmosphere of brightness and sweetness with the use of the pentatonic, high pitched melody and the celesta instrument that creates a bell-like, chiming, sweet and delicate kind of tone to end the Earth section on a positive note and to reflect the ideas of beauty and purity I associate with the images of the Earth (PGG20120907).

Galaxy Girl’s description of the slowing of tempo and thinning of texture uses the word decrescendo. This word refers to dynamic (volume) getting softer. She has applied this term to texture (the layers of sound) and tempo (speed) and implied that they are both getting smaller. Whilst there is some confusion over the use of this word, Galaxy Girl’s use of the word decrescendo in this context does imply a deeper meaning than originally intended and demonstrates a development of language to apply to other areas beyond volume. Her work at this stage can be heard here: 

With only four lessons within class time remaining, Galaxy Girl began to work much more quickly with experimenting and recording her ideas. She continued unifying her PMP by adding the voices from the introduction and the rock organ and drums from
the Galaxy section to the end of the Earth section with the aim to create ‘a reflection of what I had already done in the galaxy section’ (PGG20120918).

Galaxy Girl had the multimodal at the fore when describing how she wanted her Australian section to convey meaning as seen in the portfolio excerpt below.

The idea I had in mind for this particular section was ‘earthy’ as the images contained pictures of red, dusty, hot landscapes of places like Uluru with little vegetation and a lot of ‘earth’. When recording the drone, I thought back to films about places in the middle of nowhere (usually contain cowboys) where low drones would play that sounded reminiscent of harsh winds. By using this kind of droning sound, I wanted to convey the kind of unforgiving, harsh nature of the dusty, earthy land through its rough, deep, drawling tone, reflecting the images’ scarce, dominating landscapes’ (PGG20120919).

Galaxy Girl’s influences occurred both visually ‘films containing cowboys’ and aurally ‘low drones reminiscent of harsh winds’. She made direct connections to her prior experiences and connected her visual and audio elements by unpacking the elements and rearranging them to suit her Australia section in a slightly more modern way (synthesized voice in place of the didgeridoo). Her descriptions play with textures that are conceivable within both the audio and visual modes, as well as invoking the senses of touch (harsh winds, rough) and taste (dusty).

With just a few still images to go in her PMP, Galaxy Girl used the synthesized voice to create a melody for the Sydney pictures.
I decided to use this voice in a high register as its tone was clear and pure, vaguely reminding me of the childlike voices in the Qantas ad on TV (definitely Australian). The long, sustained, pure-toned synthesized voice melody let me produce a rich atmosphere of chastity, youth and energy – ideas I associate with Australia, particularly Sydney. I see Australia as a generally modern, pure place mostly untainted by large populations and vast amounts of pollution. I think it’s a young country whose cities, particularly Sydney, are full of beauty as well as Australia’s landscapes and creatures (e.g. image of beach and kangaroo). These were the kinds of ideas I wanted to get across in this particular section through my choice of melody and instrument (PGG20120919).

Galaxy Girl draws upon her memories of the Australian Children’s Choir singing ‘I Still Call Australia Home’ in the Qantas television advertisement when selecting her instrument and creating her melody in a high register for the Sydney section. It is particularly evident that she has strong feelings about Australia, and Sydney, as her home, along with the earlier sections that featured the galaxy and solar system, and she wants to convey them in a particular way. This is very much a part of the creative process being stimulated by the deep engagement in the multimodal.

In the final lesson, Galaxy Girl exported her audio file from Cubase and combined her audio and visual into a single AVI file that could be played without Cubase. She also put the finishing touches on her portfolio.

Galaxy Girl’s final PMP can be viewed here:

https://vimeo.com/176904892 (password: michaelphd)
The Later stage audio work including the Australian section conveys a rapidly growing awareness of how to compose audio for multimodal texts with the development of musical metalanguage to accurately depict the audio choices and their relationships to other modes within the composition. Galaxy Girl’s ability to promptly apply prior learning and suggestions made earlier during the MEMTU, to enhance the later stages of her composition demonstrate that scaffolding at the point of need, collaborative intelligence, and recursive feedback in the early phases facilitated a framework for students to then independently choose, justify and construct audio for multimodal texts.

5.4 Conclusion

Galaxy Girl’s work was selected as an exemplar as she engaged prolifically with the task of creating a personally meaningful PMP. Her motivation to produce and then justify her creations was extremely high and she possessed an extensive vocabulary, writing with great authority in her portfolio. Galaxy Girl was a model student throughout the MEMTU as she was constantly engaged in creating her PMP, did not require any extrinsic motivation, and eagerly progressed her project towards completion. Galaxy Girl provides a case study of the complex cognitive processes required to deconstruct, analyse, and reconstruct multimodal compositions. Her processes also show that to enable multimodal meaning-making, collaborative discussions at the point of need support students to effectively combine the linguistic, audio and visual modes, empowering them to create meaningful texts related to their interests and experiences.
Throughout the MEMTU it is evident that the parameters of the PMP disrupted Galaxy Girl’s instinctual learning style and her reliance on the linguistic. The constraints of the PMP required her to adapt her preferred mode of learning to focus on the creation of the audio mode. Galaxy Girl’s first attempt commenced solely in the linguistic mode, with her descriptive short stories, before adding the visual mode, through video footage and a collection of still images. In response to re-reading the parameters of the PMP, she realised that she was required to place less emphasis on the audio mode. For her second attempt, Galaxy Girl commenced creating her documentary style text by gathering images, assembling them into a meaningful order, and preparing a spoken commentary. *Multimodal meaning* had a significant impact on the planning and construction of her PMP.

Drawing upon a well-structured visual and simple linguistic text, Galaxy Girl constructed and developed her audio mode through the use of detailed analytical work that, by the end of the MEMTU, seamlessly connected the audio and the visual modes. As Galaxy Girl gained experience throughout the MEMTU she began to apply the audio metalanguage skills that we developed through the individual discussions of her personal reflections and the creative process. This enabled Galaxy Girl to create deep and personally meaningful multimodal content and discuss it using appropriate descriptive audio metalanguage that was drawn from music terminology and her abundant vocabulary. Deep engagement with the multimodal content motivated Galaxy Girl to follow the individualised scaffolds and be immersed in the creative process. These scaffolds were introduced at the point of need by the improvisational discussions we had that occurred in the moment and provide an example of the value of *recursive feedback* in multimodal text creation. As the learning style was student-centred, I adopted a needs-based pedagogy drawing on *differentiated learning*, that
facilitated the development of audio metalanguage around the understanding of music composition enabling the fluid progression of their PMP. In discussions, I was able to model appropriate audio metalanguage, assist Galaxy Girl to delve deeper into her audio influences, explore connections between the audio, visual and linguistic modes, assist with technical problems that arose, and function as a sounding board as we collaboratively constructed meaningful audio ideas that complemented the visual and linguistic modes. Collaborative intelligence was evident when engaging in idea generation, discussing audio content, and how to use technology to enhance the intended multimodal meaning. I prompted Galaxy Girl to consider exploring a connection to a piece of repertoire studied in class earlier in the year. After this initial prompt, Galaxy Girl was able to make numerous connections to repertoire previously studied. Galaxy Girl initially drew upon multimodal influences for her audio mode when she looked at the music from the computer game Halo. The audio from Halo allowed Galaxy Girl to explore ideas from a similar multimodal context, which when unpacked, enabled her to consider the connections between audio elements and the atmosphere of outer space, facilitating the realisation of the potential of the audio mode to create meaning in her composition. She also gathered inspiration from piano repertoire that she had played in the past, and repertoire that was studied earlier in the year in class. These influences and inspirations demonstrate ubiquitous learning opportunities as they bring personal content from outside of the classroom to the fore. The transformation of these influences using technology into multimodal texts was a process of active knowledge making for Galaxy Girl as she used multiple knowledge sources to innovate throughout the MEMTU.

The progression undertaken by Galaxy Girl, details the complex cognitive processes, metacognition, and scaffolded discussion required for students to demystify the many
layered process of multimodal composition and indicates that when guided appropriately at the point of need, students readily integrate the linguistic, audio and visual to compose intricate creative compositions.

Throughout creating her PMP, Galaxy Girl was motivated by the exploration of her interests based funds of knowledge. She not only got to explore a topic of passion in the Music elective, but developed her skills and agency with the audio, the multimodal, and music composition, deepening the level of interaction with her life world through reflections and analysis before using these observations to create. Her personal investment in her PMP was so deep that she went above and beyond the expectations of the task. She worked at home over the holidays on her initial ideas and later on the analysis of her influences. She also made an effort to finish her work to a high standard by putting in extra time after school to complete the task when the due date was nearby. Galaxy Girl’s process was efficient and effective as she worked towards attending to the parameters of the PMP throughout the MEMTU and was a model example of how the MEMTU can engage students in multimodal text creation with a focus on the audio mode.

Galaxy Girl’s level of musical composition was sophisticated with the crafting of a myriad of layers that intertwined in a way that reflects the manner of composition associated with Art music. She demonstrated an extensive prior knowledge of musical theory and was able to make connections between her PMP and prior work studied inside and outside of the Music elective. She referred to specific notes and chords throughout the process and notated some of her ideas using traditional and non-traditional types of notation. Despite her theoretical background knowledge, Galaxy Girl still engaged in some improvisation and experimentation, although we will see
this to a greater extent in Chapter Six when we explore Cinderella’s popular music based compositional techniques.
6. Utilising the multimodal to refashion a fairy tale: The tale of Cinderella and her love story

Chapter Six mirrors the structure of Chapter Five and focuses on a second example of student driven creative process that occurred in Phase Two of the MEMTU. Chapter Five explored Galaxy Girl’s journey of multimodal meaning-making as she created her documentary style PMP about outer space. The teacher directed scaffolding in the moment of need coupled with the organic discussion questions, facilitated the rapid progression of the development of audio metalanguage as well as critical thinking and self-reflective practices which moved Galaxy Girl’s student directed project forwards. In the middle and later phases of the MEMTU, it was evident that Galaxy Girl had grasped the skills required to create multimodal texts and reflect upon her progress, with less reliance on teacher feedback and a greater confidence in her own creative capacity. In the example in Chapter Six, the student Cinderella drew on the emotional topic, rather than an interests-based area, in sharing a deeply personal relationship connection within her PMP. This student is indicative of one who may be found in a more generalised Music elective setting, as her interests in popular music and her intuitive rather than classically trained approach to composition and structure means she reflects a larger percentage of the student population. The seven pedagogical affordances are operationalised throughout Cinderella’s learning journey as she brings her personal influences into the classroom.

The following illustrates the creation of Cinderella’s tale within the Music elective through the process of multimodal meaning-making as she interacts with the teaching pedagogies throughout the unit of work.
6.1 Discovering Cinderella

Cinderella was a student who had a multi-faceted musical background. Whilst her main instrument was the voice, she played the guitar since Year Three and accompanied herself singing up to five times per week. She has also played the piano, violin and recorder. She was a member of the Senior Vocal Ensemble, the Concert Choir and played guitar with the school Symphony Orchestra at special events. She had also previously been a member of the Australian Girls’ Choir. Cinderella’s experience with composition was mostly limited to music classes at school, although she had ‘attempted to write songs out of school’ (QC20120619). Her previous experiences of combining the audio mode with the visual and linguistic mode were adding ‘backing tracks to photo slideshows…but never using [her] own creations/compositions of music’ (QC20120619). Cinderella watched up to three hours of multimodal texts including television and Internet clips on a school day, and ‘sometimes all day on weekends or holidays’ (QC20120619). Cinderella’s pseudonym was self-generated and reflected her bourgeoning love interest in Daniel who was the central focus for her emotional outlet and creative composition. The PMP process in the Music elective provided a meaningful opportunity for students to engage in creative self-expression, draw on significant emotional interactions, while capturing something they valued and representing this in a multidimensional composition.
6.2 Making meaningful connections by bringing funds of knowledge into the PMP

6.2.1 Multimodal design: Initial stage of the PMP

Cinderella began her PMP journey by mapping out the important places in her life. Her composition portfolio contains a mind map of the important places to her on three levels; physical, emotional and abstract, with a connection being made between the physical and emotional places (See Figure 6.1). Cinderella did not have the same inclination for reaching for the linguistic mode as Galaxy Girl had (see Chapter Five) in order to commence her PMP, but rather she preferred to represent her ideas using diagrams (visual and linguistic) or by dot points. Unlike Galaxy Girl, she immediately engaged with the requirements of the PMP by using the terms given in the project handout, to describe an important place in one’s life, as a basis for organising her ideas. Similar to Galaxy Girl, Cinderella engaged in *ubiquitous learning* throughout the process and continually referred to experiences and significant individuals beyond the classroom to progress her ideas.
From her mind map, Cinderella was able to extrapolate two possible ideas.

**Idea #1**

- All of the places I’ve been with Daniel that I loved and remember clearly and have a special place in my heart ❤️
  - Fibbs Beach
Mussels Wharf
Walk from my house to the surf club along the boardwalk when we saw whales.
Harbour
His house; family dinners
My house; cooking
Marvin’s party

Idea #2

- All of the places I’ve travelled to, with or without my family
  - Fiji
  - New Zealand
  - Japan
  - America
  - Hong Kong
  - England
  - Germany, Slovakia, Czech Republic, Austria
  - Tasmania, Queensland, Western Australia, NT
  - Hawaii (PC20120730)

Cinderella’s ideas featured one that had a strong emotional connection, being the time spent with her boyfriend Daniel, and one that revolved around the physical places she had travelled. They also featured her abstract ideas: her heart, her phone, and ‘wherever’ locations. It is evident that the second idea was influenced by my modelled example PMP with the golden ukulele travelling to different parts of the world. This could account for the various exotic holiday locations listed. Cinderella’s planning for
her PMP was brief but clear using the visual and linguistic modes to produce ideas. She generated her ideas using dot points that aligned with the set criteria for the PMP and then explored the possibilities for creating a story to correspond with each idea.

Cinderella was keen to experiment with technology in the early stages of the PMP creation. In Lesson Five, she investigated the web-based text to movie generator, Xtranormal, which had featured in my PMP, ‘In Search of the Golden Ukulele’. Cinderella auditioned the different characters and voice types that were available to act out and speak the written text. Unlike Galaxy Girl, she attempted to utilise more types of technology in creating the audio and visual for her PMP. Cinderella demonstrates a thorough engagement with active knowledge making and interest in developing her use of technology, reflective of a broader population of students who, within a tech-savvy generation, are readily engaged and enthusiastic to explore the potential of technology to express their emotions.

After a few absences from class, Cinderella settled on idea one in Lesson Eight.

Today I decided that I’m going to do Idea #1 because it will be more fun for me to make. I’m planning on kind of making a mini love story style of thing, with a character from Xtranormal narrating (PC20120801).

Cinderella narrowed her focus to the immediately relevant and emotionally gratifying love story idea she had initially planned. Her decision to narrate the text using a web-generated character reflects her modernising of the fairy tale form while also retaining its traditional conventions of being orally spoken. The motivation for her PMP stems
from the ability to explore a personal experience through a creative lens that clearly links directly to her identity.

In Lesson Nine, I asked the students to write about their PMP in their composition portfolio by completing a storyboard or timeline and describing how it represented an important place and had meaning to the student. Cinderella created the following storyboard, which gave reference to the setting (mostly visual) and some of the sounds that could go along with the visuals, as seen in the portfolio extract below.

<table>
<thead>
<tr>
<th>Scene</th>
<th>Sound</th>
</tr>
</thead>
<tbody>
<tr>
<td>City street/video of busy city – Character narrates</td>
<td>City noise</td>
</tr>
<tr>
<td>1 Skype screenshot or logo</td>
<td>Computer sounds</td>
</tr>
<tr>
<td>Zoom into chat bar. ‘Do you want to go out with me?</td>
<td>Typing sound</td>
</tr>
<tr>
<td>3a Character narrates</td>
<td></td>
</tr>
<tr>
<td>3 Café</td>
<td>Café sound effects, jazzy/smooth romantic music</td>
</tr>
<tr>
<td>3a Train station with rose</td>
<td>Romantic music</td>
</tr>
<tr>
<td>3b Character narrates</td>
<td></td>
</tr>
<tr>
<td>4 Movies</td>
<td>Thriller/horror/action themed music</td>
</tr>
<tr>
<td>6 Beach</td>
<td>Ocean, calm music</td>
</tr>
<tr>
<td>7 City/harbour</td>
<td></td>
</tr>
<tr>
<td>8 My house/ cake we made</td>
<td></td>
</tr>
</tbody>
</table>
This storyboard outlines the structure of Cinderella’s PMP. It contains some references to the audio mode that would be created to compliment the visuals. The numbering system is unusual as some of the scenes appear to be added after the original numbering system was created, with the notable omission of scene 5, family dinner, which was crossed out. Cinderella embraces multimodal meaning as the creation of digital media sustains her interest and foregrounds her planning. The following justification demonstrates Cinderella’s interpretation of a special place, as per the criteria of the task, as primarily an emotional experience, which is set against physical locations.

The basis of the story is the beginning of a young romance, which blossoms into a long-lasting friendship. It shows of the places the two lovers visited and certain things they have done together. This story is personally meaningful to me as it is basically everything I’ve done in my relationship and the places that are special to me and that I remember ❤️.

Cinderella found the freedom to create her own story very engaging, and this motivated her to be creative in her approach. She has personified the character Cinderella from the fairy tale and has applied the emotional connections of love to herself. Her portfolio entries included pictures of hearts and was written in the colours, pink, purple and green, using the visual mode to enhance the linguistic and maintain the emotive qualities Cinderella wished to represent. The following response to a reflection

<table>
<thead>
<tr>
<th></th>
<th>Walk to Club/whales</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Party</td>
</tr>
<tr>
<td></td>
<td>Club/techno/electro/music</td>
</tr>
</tbody>
</table>
questionnaire prior to completion of the MEMTU articulates the sustained engagement of Cinderella, having chosen an area of personal interest.

How important is it that this project is about yourself and your identity?

It’s very important as it makes the project highly enjoyable. As it relates to me, I can easily put a lot of creativity into it and embrace the assignment (PC20120914).

Unlike Galaxy Girl who demonstrated her engagement in the project through detailed portfolio descriptions, Cinderella showed her deep investment by exploring and trialling with ways to convey her story. In the early stages of the project, Cinderella experimented with the technology demonstrated in my sample PMP and chose to embed short video clips using Xtranormal for her narration. While excited about the creative potential of her idea and having astute technological skills, Cinderella still required teacher assistance at the point of need, particularly when familiarising herself with previously unexplored technological platforms. Following this initial prompting and demonstration, she selected a short man with a hat and a moustache to narrate her story. She utilised a ‘green screen’ function for some of the clips and inserted the background image of the city using the software, Pinnacle. Cinderella’s Xtranormal clips can be viewed here: https://vimeo.com/185754128 (password: michaelphd).

In Lesson Ten Cinderella compiled all of her images and movie clips in Pinnacle, working out how to use the green screen feature, to import the visual and linguistic component of her PMP to the timeline. She was open to altering the time length of each clip as she created in the audio mode to suit each scene.
With the process of putting music with my video, I’ve decided I’m going to make the music as long as I want for each picture/group of pictures and then adjust the length of the images to fit the music (PC20120817).

Being quite technological savvy, Cinderella was flexible with the length of each visual image and would make adjustments so that they fit with the audio that she created. This was unlike the process that I demonstrated in my PMP and also undertaken by Galaxy Girl, where the visual was fixed and the audio had to be made to fit with it. By approaching the task in this manner, Cinderella was able to reflect on each of the modes throughout the entire project, therefore making it possible to alter each mode right up until her PMP was complete and for the audio mode to impact on the visual and linguistic modes and the overall structure of her PMP. Unlike Galaxy Girl who used Windows Movie Maker, Cinderella required the ‘green screen’ feature so utilised the more powerful video editor, ‘Pinnacle’. Figure 6.2 and 6.3 show screen captures from Lesson Ten of the timeline window with the green screen function of the narrator character, and the title screen design page.
The images and still captures from moving images that Cinderella used throughout her entire PMP are in order below (see Figure 6.4). She worked methodically to firstly create linguistic content for each scene, collect images and video to represent the intended meaning, prior to creating audio to accompany and enhance the emotional experience she wished to convey.
Cinderella’s initial planning for her PMP did not contain the same level of detailed descriptive writing as Galaxy Girl; however, she outlined the scenes, prepared the visual, created the linguistic, utilising a greater variety of technology to assist in the process. She also had made suggestions as to the types of audio that would be appropriate for each scene in her storyboard. Cinderella’s process allowed for flexibility with the ability to change the length of the visual scenes after the audio had been created. Cinderella had approached the initial stages of the PMP in an effective manner, successfully preparing her PMP for creating the audio mode. She demonstrates the ability to plan in the audio and visual mode which best suited the emotional self-expression that Cinderella sought, thus negating the need for extensive

Figure 6.4 Screen captures of Cinderella’s visuals from her PMP.
written detail. While Galaxy Girl provided detailed descriptions through which her ideas unfolded, Cinderella demonstrates the capacity for experimentation with the audio and visual mode to organically create ideas through creative interactions and thought processes. Her creative ideas were being developed through her *active knowledge making* and experimentation with *multimodal meaning* using technology as a tool. She continuously referred back to *ubiquitous learning* as she drew heavily upon her emotional connections and experiences of being in a relationship to progress the representation within her PMP.

### 6.3 Creating meaning in the audio mode

Cinderella was a talented musician who had many instrumental skills, although for this project she restricted herself to the use of the midi keyboard rather than recording any ‘live’ guitar or vocals. This was a surprising choice as she was readily regarded as a strong popular musician by others in the class and possessed a beautiful singing voice. Despite some prompting to broaden her repertoire to include live instruments and voice, Cinderella steadfastly maintained that she would prefer to compose using only the midi keyboard and other technological means. Cinderella’s apprehension to share her live musical talents within the project was typical of Stage Five students’ reticence and shyness to record personal audio. The technological choices she made offered her a platform for personal self-expression without fear of judgement.

### 6.3.1 Early audio work – mimicking musical moments
Over the weekend after Lesson Ten, Cinderella began the process of creating in the audio mode by analysing the song, ‘Internet Friends’ by Knife Party. Her observations can be seen in the following excerpt from her composition portfolio:

- constant static beat/drum noise, quite fast pace
- siren noises going up in quick short cuts, then going down after repeating the up 3 times
- smashing sound effects
- electronic/synth sounds
- computer sounds and/or iPhone ringtone
- electric strings (PC20120807)

In this analysis, Cinderella identified the layers of sound (instruments) and described the beat as being constant, static and quite fast paced. Her descriptions of all musical elements in this song were quite brief at this stage. Her choice to focus on this song aligns with her creative decision to incorporate a Skype scene into the PMP. While simplistic, the musical elements within correspond to the sound effects designed to imply a blossoming romance online. Cinderella’s choice of song to analyse paralleled the visual style she endeavoured to create in the Skype scene, with screen shots and sound effects of typing. The increased communication and interaction via technological means suggests that the PMP with enhanced technological platforms would still remain highly relevant to the contemporaneous classroom context as students could express ideas about online interactions through the audio mode as demonstrated by Cinderella.
In Lesson 11 and 12, Cinderella began recording some of her audio mode ideas using Cubase. The first fragment of audio that Cinderella included in her PMP was a sound effect to accompany the images of the busy city as seen below in her portfolio extract.

During the aerial shot of the city and the narration, I decided to put a helicopter noise because it links directly to the image and I’d also like to put a car horn to add to the busy/chaotic feel (PC20120810).

Cinderella’s first audio decision complimented rather than paralleled the visual mode, as she sought to create atmosphere rather than punctuate action shots with the helicopter sound. She also experimented with creating audio to parallel the typing visual from her Skype text scene as seen below. Cinderella utilised both complimenting and paralleling with her audio mode when aligning to the visual mode in her PMP.

During the Skype scene, I’m hoping to base the music off the song, ‘Internet Friends’ by Knife Party and I may add some iPhone ringtone sound effects and/or typing. I tried replicating typing noises, but it didn’t really work...I tried several different instruments and none of them sounded right (PC20120810).

The video of Cinderella’s computer screen shows her experimenting with the ‘Synth Drum’ sound. She tried many rhythmical ideas that were an attempt to imitate typing. The excerpt above shows that she was not convinced that these would work at this stage. Whilst the first idea featured audio that complimented the scene, this second idea of adding typing and phone sounds is an example of paralleling between the audio and visual modes. She also attempted to create a melody for her romantic café scene.
For the café scene, I created a calm romantic piano melody. Originally, I wanted to make it a jazzy music piece so next lesson, I may add a double bass and/or saxophone. I wanted this, as cafés are a place where people relax and sometimes listen to chilled music there. It’s a place to de-stress and the image chosen looks like somewhere peaceful and relaxing too. The dim lighting of the image also conveys this idea (PC20120810).

Cinderella describes her attempts to create a romantic piano melody. They feature an ascending arpeggio, which utilises a major 7th chord. Cinderella does not unpack the details of her idea. This was possibly due to her creating the material through experimentation, rather than understanding the implications of using particular note patterns or knowing what notes she wanted to play. This aligns with the compositional process of popular style musicians, reflective of a general classroom population, who tend to experiment with audio rather than theorize about the notes. Cinderella recognises the common instruments within a ‘jazzy’ piece of music, including the double bass and saxophone, but at this stage her lack of detailed analysis prior to experimenting reveals that the role of each instrument within a jazz ensemble is not the primary focus for Cinderella and her creation is more intuitive rather than based on analysis. Cinderella’s choice of language for describing the atmosphere of the café is the catalyst for her selection of musical material. She uses non-musical terminology such as ‘peaceful and relaxing’ to describe the scene demonstrating an instance of leaning on the linguistic mode. She refers the music listened to in a place of this style as ‘chilled’. Cinderella was an example of a student who was able to work towards completing her plan with minimal teacher input. Up to this stage, she did not seek feedback on her audio work, but rather created through experimenting following the
scaffolds from Phase One of the MEMTU on her own. Her creativity comes in the form of problem solving as active knowledge making informs her compositional process.

Cinderella’s work up to this stage can be viewed here:
https://vimeo.com/186622699 (password: michaelphd)

Cinderella differs from Galaxy Girl as her compositional style favours the experimental, meaning that her progress maps a pattern of trial and error, whereby, she begins with experimentation and alters her ideas and choices when encountering challenges. Whilst not as systematic, her PMP process demonstrates the ability for students of varied musical understanding to attain success, as the criteria of the PMP provide a broad scope of skills to choose from and focuses on areas of personal student interest to maintain engagement. Due to her limited understanding of, and engagement with, musical theory, Cinderella provides an apt example of a music student who uses the multimodal in an experimental format to approach a task and bridge the gaps between her theoretical understanding and practical skill. Unlike Galaxy Girl who could consciously articulate specific audio decisions using musical terminology, Cinderella uses the multimodal to convey her meaning and is still successful in creating within the audio mode.

6.3.2 Middle stage audio work – developing depth of understanding

In the middle stage audio work for Cinderella, recursive feedback and collaborative intelligence was activated and significantly developed the progression of her ideas
within the audio mode. Differentiated learning when providing feedback determined the degree of scaffolding required to enable her to better understand and create audio. Multimodal meaning, while present throughout the PMP, was particularly pertinent in providing Cinderella with access points into audio decision making.

Several learning conversations occurred in this stage which helped Cinderella to reflect on her multimodal meaning making and developed the depth of her insights into the interaction between the modes and use of audio metalanguage. In Lesson 13, during one of these learning conversations, Cinderella showed me the music that she had composed so far. Surprisingly, she had drawn on Spanish, Cuban and Latin American genres to create the persona of the narrator. While drawing away from traditional characterisations of fairy tale narration, Cinderella justifies her choice of this audio feature in the reflection below:

He [Mr V] seemed intrigued as to why the ostinato playing whilst my Xtranormal narrator was speaking had a slight Spanish/salsa/samba/Cuban feel to it but the reason I think I chose this was because the character himself looks slightly Spanish/Cuban and that he’d be capable of that kind of a dance style. Also, the motif reminds me of other animated characters I’ve seen where similar music was played (PC20120815).

The portfolio reflection above demonstrates the enactment of collaborative intelligence, whereby the learning conversation facilitated Cinderella’s justification of narrator choice in light of the audio mode. It also conveys how multimodal meaning can allow students to create meaning in multiple modes simultaneously allowing her to readily access the audio mode. Interestingly, Cinderella connected the musical ideas
to the way in which the character looks and his dancing. This ability for *multimodal meaning* to drive the creation of the audio mode in the Music elective is seen below as Cinderella further unpacks her audio decisions following a learning conversation.

[Mr V] also listened to my café music and liked it as it was smooth and yet jazzy at the same time due to the major 9\(^{th}\) chords...[As] my movie is a love story, all of the music I make will probably have some elements of romance in them, however I will try and vary them so they all sound different and relate to the environment, which the image was taken in (PC20120815).

The learning conversation impacted upon Cinderella’s metalanguage in the composition portfolio as she now identifies her audio using more specific terminology – major 9\(^{th}\) chords. Learning conversations are pivotal in assessing the individual needs of students and enhancing their use of metalanguage to describe their intended meaning. At this point, Cinderella’s aim to include elements of romance in all of her music was not unpacked in her composition portfolio but could be observed through the genres of music that she had selected for her visual scenes so far. Her audio mode appears to have been driven by her previous experiences which in turn influenced her choice of the romantic theme. For example, the café scene made use of stereotypical jazz music and the narrator of her love story featured Spanish flavoured music.

Building upon her reflection of the learning conversations, in Lesson 14, Cinderella trialled new musical ideas within the café and narrator scenes. She firstly experimented with the idea of adding to the Spanish flavour of the narrator’s music, by incorporating a steel string guitar and a flamenco guitar. She also undertook work on some of her
suggested ideas for the café music as seen in the following extract from her composition portfolio:

Added tenor sax to café music however I feel it detracts from the piano part now. I might not add it in the end.

Got rid of the sax and replaced it with string ensemble. Sounds a lot nicer and more cohesive. Mr V agreed with my decision and suggested tidying up the timings etc. and possibly adding a bass part (PC20120817).

Cinderella’s work up to this stage can be viewed here:
https://vimeo.com/186621917 (password: michaelphd)

Cinderella undertook experimentation when creating her café music. She was not pleased with the addition of the saxophone part to the music and opted to replace it with a string ensemble part as it better complemented her intended representation of a café. This catalysed the need to seek teacher intervention and the teacher’s realisation of the gaps in Cinderella’s understanding which she had previously masked through her streamlined approach to improvisation. It became clearly evident that Cinderella did not understand what she had created harmonically in the discussion excerpt below:

Mr V: So, do you know what chords you’ve used?

Cinderella: I just played around...(CC20120817).

Cinderella created this part by trial and error, rather than being concerned about which notes she was incorporating. This was made particularly evident within her
composition portfolio, as any form of notation or detailed analysis was omitted. Our discussion led me to engage in recursive feedback to encourage Cinderella to consider her musical decision not to include the saxophone part in greater detail.

Mr V: [listens to music]...And then your strings, very pretty. I see why the sax didn’t work with those long-sustained notes. The solo sax is probably not going to play a part that is so sustained for a long period of time. When you hear a saxophone, normally it plays more melodic material and then it disappears, and it breathes like a singer. Sometimes you hear it in a chordal setting but not very often. Because this idea is so free in tempo, it’s going to be very difficult to add a bass to it. You know if you were going to add a bass, you’d be thinking about adding a groove to it, wouldn’t you? (CC20120817).

The intention of this feedback was to demonstrate a way of unpacking Cinderella’s musical decision not to use the saxophone, showing her the depth of analysis required when constructing multimodal meaning. I not only comment on her reasons for not using the saxophone, but also make connections as to what might need to occur in her music in order to add a bass part. To make this step more explicit, I demonstrated a possible bass part using the keyboard activating collaborative intelligence and differentiated learning based on the degree of assistance required. Below is the excerpt in which teacher scaffolding at the point of need is demonstrated using the audio mode to enhance the meaning of the linguistic mode, in an attempt to enable Cinderella to hear possible thematic threads relevant for the scene.
Mr V: For example, if you tried a bass...like an acoustic bass, you would be doing something that sounded like...[playing music]...you could have something like that and your melody over the top...[playing music]...it could give you a nice string line...but if you don’t want to have a fixed rhythm, you could just use some...[plays note] long sustained bass. It’s up to you, just have a think about it. Have you got any examples of similar things like that, that you are modelling off?

(CC20120817).

The interactions that I had with Cinderella so far about the content of her musical material were at a general level. She was still unclear as to what she was trying to create musically, conveying an instance where teacher intervention at the point of need was beneficial to facilitate meaningful progress. I referred her back to the scaffold from Phase One by suggesting she find some examples of similar things to model her ideas on, and then unpack these examples. This recursive feedback and reference back to scaffolding was effective as Cinderella took my advice and began exploring some different genres of music. Cinderella’s analytical work focussed on the main musical features that she identified. These were the names of the layers of sound (instruments), tempo (speed), and tonality (harmony). She sometimes offered a qualifying description to the layers of sound that were important within the piece being analysed as can be seen in the composition portfolio extract below:

Analysis

‘Calypso Music’ – David Rudder

- Xylophones
- Drums, steel
- Trumpets
- Quite fast tempo, upbeat
- Major keys
- Lots of percussion – cow bells

**Fallin’ For You – Colbie Caillat**
- Guitar strumming on every single beat then plucks (could be strings/violins?)
- Steady drum beat
- Higher harmony voice
- Piano playing chords
- Female voice

**Dream is Collapsing – Hans Zimmer (Inception)**
- Strings intensifying volume and speed with each time ostinato played
- Single guitar played at the start playing the same note repeated 3 times
- Number of instruments builds up
- Bass guitar echoing
- Drum/surge sound booms through
- Brass instruments; trombones (PC20120818).

While Cinderella did not provide as much written detail as Galaxy Girl in her analysis work, she identified some of the key elements within each song that were important to her and made some observations about them. As her analytical work progressed she began to use greater descriptive language that incorporated more musical terminology. Her description of *Dream is Collapsing* contains the greatest level of detail as it made reference to the most musical elements – dynamics, tempo, rhythmical devices,
repetition, and building of texture. Despite her musical analysis not reaching a sophisticated level, she was able to generate ideas to experiment with to best select instruments and how they could be played.

In Lesson 15, Cinderella continued to follow the scaffold provided to create audio that was based on the ideas from her previous analytical work. Synonymous with the general classroom student, Cinderella drew on multimodal texts from popular culture to inform her decision making and influence her process of creation. In Lesson 16 and 17, Cinderella experimented with ideas for recreating the suspenseful nature of the music from *Inception* for her movie theatre scene.

**Thought about music for movie scene**
- based on *Inception* film music
- thriller/drama/sci-fi as it would add contrast to the rest of my movie (PC20120821).

**Worked on movie scene**
- tested different string instruments and ensembles
- arranged different ostinatos
- kept listening to real *Inception* soundtrack to get inspiration on instruments and ostinato (PC20120824).

Cinderella’s portfolio was quite brief at this point, making it difficult to determine the level of her comprehension of her musical influences. She was more focused on experimentation rather than written reflection, an indicator that there were gaps in Cinderella’s understanding which inhibited smooth progress forwards. The following
excerpts demonstrate that through verbal discussion it became clear that recursive feedback to enhance understanding was required. I explicitly drew upon both the written and verbal modes of communication to establish a clear indication of where Cinderella’s learning process was at.

In the excerpt below, we discussed her ideas for the movie scene ascertaining the necessity for a climactic moment in the audio to support the meaning created in the visual mode.

Mr V:  Okay Cinderella, what are working on today?

Cinderella:  I’m doing the movie one, I’m basing it on the song from Inception, which the music is by Hans Zimmer.

Mr V:  By Hans Zimmer, okay. So, we’ve got written here strings intensifying in volume and speed each time the ostinato is played. So, we are going to have an accelerando, and big crescendo, are we?

Cinderella:  Yeah, I’m going to the bass clef (CC20120824).

The above discussion prompted Cinderella to expand her listed musical analysis. I reworded her idea of intensifying speed and volume, to accelerando and big crescendo, but Cinderella’s response was indicative of her confusion with the musical concepts. This instance demonstrates a moment where teacher intervention at the point of need is beneficial for progress. At this point, I continued referring to her portfolio with the
intention of having her unpack her musical ideas, however, I quickly changed tact when realising that she required a different approach.

Mr V: Okay, so ‘single guitar playing base notes repeated 3 times’, and the ‘number of instruments build up’, and the ‘guitar echoing’. Let’s get your spelling of ‘bass’ correct?

Cinderella: Yes, (giggles).

Mr V: Okay, drums surge and brass instruments with trombones and things. Ok, so it’s very orchestral sounding. So, have you got an idea for your theme yet?

Cinderella: No (CC20120824).

Cinderella’s brevity in responses conveys that she had yet to consider the depth and detail of the musical influences that she had chosen. Teacher intervention ensured that she engaged with and analysed her musical influence in greater depth as indicated in the discussion below.

Mr V: So, is it in a major or minor key?

Cinderella: Well, it kind of starts major and then drifts into minor?

Mr V: So, they kind of morph from major to minor?
Cinderella: Yeah, it goes into minor.

Mr V: So, how many notes are in this motif?

Cinderella: Not many, two.

Mr V: Okay, it’s fairly short, is it?

Cinderella: Well, it’s like long notes (sings) then all the other instruments come in. And then have different things that play underneath.

Mr V: Like countermelodies and things that spiral?

Cinderella: Yeah.

Mr V: Ascending, are they?

Cinderella: Yeah, and then there’s the one that goes (sings).

Mr V: Okay, so it goes up?

Cinderella: Yeah.

Mr V: So, it just gradually builds up and the layers get thicker and thicker.

Okay, great (CC20120824).
In this discussion, I reviewed basic musical concepts such as major/minor, and this prompted the expansion of the discussion. Interestingly, Cinderella decided that the most effective means of communicating her insights was via the audio mode by singing. As evident above this significantly developed the shared understanding and deepened the discussion of concepts to include countermelodies, ascending melodic lines, and textural words including layers getting thicker. Cinderella’s experimental style of learning, demonstrated through singing, coupled with my facilitation of questioning enabled her to communicate her specific meaning in an appropriate fashion, suggesting the significance of the audio mode as a preference for communication when other modes are somewhat inaccessible or incomprehensible. Afterwards in her portfolio she also referred to wanting to create ‘something suspenseful’ for the music (CP20120824).

Cinderella’s work on the movie-based idea, commences at 50 seconds, and can be viewed here:


Throughout this section, it is evident that Cinderella was able to develop some depth of understanding in her audio influences and begin to apply them to her PMP. The teacher interactions at the point of need, encouraged her to examine her audio influences more carefully and unpack them using musical terminology. Significantly, it is important to clarify that although Cinderella may have had brief written entries in her portfolio, her engagement with the task remained unwavering as there were other modes which provided access points and stimulated her interest. Whilst Cinderella instinctively reached for the audio mode to assist with communicating her thoughts, with teacher guidance she was able to develop her use of metalanguage to include
musical terminology when describing the audio mode. The visual elements of the PMP provided a starting point for selecting audio influences to analyse. The following section demonstrates how the meaning contained within the visual mode can drive the creation of the audio mode and the development of metalanguage to describe it.

6.3.3 Later stage audio work – accessing music through the multimodal

In the later stages of the MEMTU it became evident that Cinderella was able to develop her use of metalanguage to describe the audio through discussion.

I followed up on her progress on the music in the movie scene in the following lesson, Lesson 18. Cinderella played her audio work for me, prompting a discussion regarding the connections between the audio and the visual, as demonstrated below.

Mr V: So, it’s based on Inception, it’s very dark sounding, isn’t it?

Cinderella: Yeah because the photo’s kind of…dark.

Mr V: So, what is it about the music that…what instruments make it sound dark?

Cinderella: The drawbar organ.

Mr V: So, it has got a very low sounding organ there.
Cinderella: Yeah, the organ and some piano, and the pizzicato strings has an eerie kind of sound to them.

Mr V: And they’re playing in the low register, aren’t they?

Cinderella: Yeah, and then there’s the strings as well.

Mr V: Very low, minor sounding. Great, I like that, that really works.

(CC20120827).

Figure 6.5 – still image for movie scene.

The visual mode enabled Cinderella to access the creation of meaning within the audio mode. This learning conversation demonstrates that during recursive feedback teachers need to be flexible and may need to alter their questioning techniques to differentiate for student ability and engagement. I rephrased my initial question from ‘what is it about the music?’ to ‘what instruments make the music sound dark?’ This elicits a more precise response from Cinderella, whose previous responses have lacked specificity. This question encourages Cinderella to add greater depth to her subsequent responses and she elaborates on the other instruments that are present and their quality.
of sound. During this learning conversation, I continued to prompt Cinderella with audio metalanguage to guide her thinking and analysis work. Through collaborative intelligence it is evident that Cinderella has acquired a greater depth of understanding in comparison to her prior discussions as she was able to identify the instruments and use some musical terminology to describe their function.

Cinderella’s work can be viewed here:
https://vimeo.com/186687129 (password: michaelphd)

The process of experimentation ensured that Cinderella remained engaged and continued to enhance her deconstruction of musical influences which supported the development of her analytical skills. Cinderella was working on the audio mode to accompany each image as an individual project. The technology enabled Cinderella to organise her thinking in a systematic and fluid way which categorised the different aspects of emotional expression she wished to convey into separate files.

In Lesson 19, Cinderella and I discussed the music within her beach scene. There was a greater level of detail appearing in her descriptions in these discussions as the unit of work progressed.

Mr V: Okay, so what is going to happen in the beach scene musically? What are you thinking?

Cinderella: I’m just starting off with the ocarina, the shell thing. And I’m just doing a single melody line.
Mr V: Major? Minor?

Cinderella: Yes, major.

Mr V: High register?

Cinderella: Um...normal.

Mr V: Middle?

Cinderella: Yeah, not very high.

Mr V: Not very high, okay. Fast? Slow?

Cinderella: Um, this bit here speeds up a tiny bit, because it’s like running, and I think that bit goes a bit faster, because it builds up to that (CC20120904).

In this excerpt of the learning conversation, I asked specific questions which required Cinderella to consider the musical concepts. She exhibited traits of wanting to create immediately rather than analysing and discussing influences that would assist her. I enacted collaborative intelligence by recognising the desired meaning she wished to create, and prompting her with audio ideas that could accompany the beach scenes, as she was stuck with the one instrument.
Mr V: What are you thinking for the beach? Other instruments apart from the ocarina to go along with it?

Cinderella: Um, maybe strings or a harp, or I don’t know?

Mr V: What would you associate with the beach?

Cinderella: Or steel drums, that’s what I was going to do, but that would be a bit heavy with the ocarina.

Mr V: Steel drums are fairly light.

Cinderella: Yeah, if I play them up high.

Mr V: You normally just play 2 notes on the steel drums at a time, because you have 2 sticks, steel drums are mostly melodic. Or what about a ukulele, or a guitar?

Cinderella: Yeah.

Mr V: You could record it live, you don’t even have to use these instruments (midi). We can just plug a microphone in and off you go. We can do it tomorrow?

Cinderella: Maybe, I’ll have a think about it. I’ll play around with a ukulele and stuff and see if I come up with anything (CC20120904).
Cinderella voices her idea of using the steel drums and strings for this part but is concerned by how they will interact with the ocarina. Collaborative intelligence occurred as we spoke about how the steel drums are usually played and Cinderella decided that she play them in a high register. Knowledge of Cinderella’s musical background assisted me to enact differentiated learning by suggesting she use a guitar or ukulele, as Cinderella played both instruments, and that she could record them with a microphone rather than using a midi instrument.

Cinderella’s work can be viewed here:


In the following lesson, Cinderella continued work on the audio mode for the beach scene and implemented ideas from previous learning conversations. Her portfolio entry, seen below, displays a deeper understanding of the metalanguage, function of the instruments, and the interactions between the layers of sound.

- Adjusted ocarina part to make it easier to make a steel drum part as well
- Created a steel drum part, very calypso-ish
- Fast and two notes played at once (PC20120910).

Cinderella drew upon the notion that the steel drums normally have two parts played at once. She commented that her steel drum part sounded ‘very calypso-ish’, similar to Galaxy Girl’s linguistic use of the suffix ‘ish’. Cinderella unpacked this further by describing it as ‘fast and two notes played at once’. Whilst the description is not universal, knowing the context of the scene, the description reveals her ability to
oscillate between the audio and linguistic modes in order to achieve a clear articulation of their thoughts and ideas. The acquisition of precise metalanguage to accurately depict *multimodal meaning* requires a deep knowledge of each mode and its function. As Cinderella is developing her understanding in the audio mode, she draws on the linguistic to supplement her meaning.

Cinderella’s descriptions became clearer as the unit of work progressed, and she gained confidence and required less pointed questions during *recursive feedback* as seen below.

**Mr V:** Okay, Cinderella, what are we doing today?

**Cinderella:** I’m doing the music to that picture.

**Mr V:** That picture, describe it for me.

**Cinderella:** Two people sitting on a pavement, hugging, sunset.

**Mr V:** So what type of music are you doing for that?

**Cinderella:** I’m using piano but it’s kind of like a little kids’ kind of piano because it’s really cute sounding, and quite quick.

**Mr V:** Quite quick? Is it high pitched?

**Cinderella:** Yep.
Mr V: It looks very high, doesn’t it? Written above C5, yes?

Cinderella: Yep. And it’s got an interval of a 6th (CC20120910).

In our learning conversation in this lesson, Cinderella provided greater insight into her work and readily volunteered her musical understandings without explicit prompting. The collaborative intelligence in this example was more evenly balanced between teacher and student.

In Lesson 23, Cinderella demonstrated her developing musical understanding as she worked on some music for her club scene. She described her work using musical terminology demonstrating growth and greater depth than earlier in the project.

In today’s lesson I:

- created more possible club music, by using a brass instrument ostinato group.
- Each instrument plays a different ostinato
- Major key
- I want to add a bass to it to make it more boppy/techno like club music.
- I used brass instruments as they have a full strong sound.
- During this scene I want moods of excitement, fun, fast movement and dance to be created (PC20120914).

In this reflection, Cinderella identifies that each layer of sound is playing an ostinato but she incorrectly identifies the tonality is major, when it is minor. Her non-musical
descriptors such as ‘more boppy/techno like’ help to connect to the multimodal meaning intended with the scene being full of ‘excitement, fun, fast movement and dance’. Whilst there are some inconsistencies in Cinderella’s descriptions as she was still developing her skills in the linguistic mode to analyse music, she has adopted the same approach to analysis as enacted in the recursive feedback provided in the learning conversations and subsequently has enhanced her use of metalanguage for reflection.

Cinderella’s work up to this point can be viewed here:

https://vimeo.com/187432579 (password: michaelphd)

Cinderella added the finishing touches to her PMP in Lessons 24-27, where she completed the audio for the club scene and rearranged the order of her material to align with the images of her project. The process that she went through of creating music to any length and then adjusting the length of the images to suit was different to that of Galaxy Girl and whilst it created an element of freedom for her, it was difficult for the teacher to imagine the final product when listening to the isolated segments of her PMP throughout the unit of work. This approach demonstrates Cinderella’s metacognition as she intuitively selected a method that complemented her learning style and provided ample room for experimentation.

Cinderella’s final project can be viewed here:

https://vimeo.com/176904537

6.4 Conclusion
Throughout the process of the MEMTU for Cinderella, the parameters of the task enabled her to engage in *ubiquitous learning* by accessing an area of personal interest, the emotional connection of her relationship with her boyfriend and their shared experiences. The PMP maintained her engagement for concurrent weeks and allowed her to simultaneously engage in creative emotional self-expression whilst also developing her metalanguage and analytical skills in the audio mode. Despite her brief written descriptions, this did not detract from the achievement of creating a PMP and implies that students who do not favour the linguistic mode in written expression are still capable of representing their emotions and ideas through other modes with the assistance of technology. This is particularly relevant to the contemporaneous classroom context in which technology plays a vast role in teaching and learning. Her achievements in creating a unique and emotionally self-expressive PMP foregrounds the value of the process in allowing students to access truly meaningful moments through multimodal frameworks.

The Music elective, particularly when scaffolded appropriately with the combination of student-directed learning with teacher interaction at the point of need, provides the valuable opportunity of enabling students like Cinderella to celebrate a significant aspect of their life and represent this through skills learned within the classroom. Cinderella’s intuitive, experimental, and trial and error approach coupled with her passion for popular music were all incorporated into her PMP as she used *metacognition* to choose a learning style which best suited her needs. Her case study provides a significant example of a student who could be found in the generalised classroom context and demonstrates the approach many students would take to this PMP if they were not classically trained musicians. Cinderella’s level of musical composition parallels that of a popular rather than classically trained musician and the
more simplified scene by scene approach adopted by her allowed for the successful addition of audio in a variety of genres that could then be threaded together to create a multilayered text. Cinderella effectively developed a level of understanding in multiple genres of music due to her ability to combine the emotional sphere with previously sourced examples and use these to influence the creation of a new multimodal text. The experimental style demonstrated by Cinderella also conveys moments when the student requires teacher interaction in order to solidify and better comprehend musical concepts. Her project outlines the specific instances when recursive feedback and collaborative intelligence help to move the student’s understanding from basic to more detailed and reveals the power of targeted teaching strategies to enable students to gain a depth of understanding while still maintaining agency within their project.

The multimodal approach, particularly relevant to the Music elective, enabled Cinderella to utilise her prior knowledge and skills to access meaning. Her singing and musical interactions with the teacher supplemented her reluctance to communicate highly detailed entries in her portfolio using the linguistic mode. Cinderella conveys an area of opportunity, whereby teachers can access and recognise the level of student understanding by assessing their metalanguage. The audio mode, in the case of Cinderella, provided an engaging and connecting factor which enabled the teacher to meaningfully interact with the student, access areas of understanding and help her to make important decisions regarding a highly personal and emotional area of exploration within the PMP. Through the use of the audio mode, Cinderella was able to access the terminology and concepts associated with the linguistic mode, particularly when interacting in learning conversations, and over time there was evidence of an exponential increase in the sophistication of her use of metalanguage and musical analytical skills. Thus, a multimodal approach to teaching and learning
provides teachers with better access to understanding the level of student comprehension. This has immense implications in areas of assessment, self-reflection and the development of pedagogy as a whole.

Finally, Cinderella’s ability to choose an area of personal interest was the primary motivator for her to sustain her engagement over a long period of time providing beneficial evidence of the power of ubiquitous learning opportunities and differentiated learning through student choice and agency within the teaching and learning process. Additionally, the multimodal approach enhanced Cinderella’s interest as while representing a meaningful emotional concept she was highly engaged in learning metalanguage and new technological skills, and was presented with an approach to learning which she considered fresh and ‘fun’.
7. Childhood innocence relived through the multimodal

The previous chapter addressing sub question two, ‘How are students’ multimodal meaning-making capacities enabled by contemporary multimodal pedagogies in music education?’ examined Cinderella’s experimental approach to the PMP and reflected the capabilities of a large body of the general student population in the Music elective. She achieved the successful completion of a PMP that reflected a highly valued relationship and Cinderella’s personal interests were used to convey the emotional connection which maintained her engagement. Like Galaxy Girl, initially Cinderella considered documenting a favourite place, however, upon reflection she decided that the experiences associated with her current relationship with her boyfriend provided a rich emotional realm from which to compose a multimodal text. Throughout the process, Cinderella favoured an approach which relied heavily on intuition and experimentation, fitting well with the emotional experience. This reflected the style of learning of popular musicians and the PMP facilitated the opportunity for Cinderella to both creatively express her interests while simultaneously acquiring a deepened understanding of the musical metalanguage associated with her influences and compositions. Cinderella drew on influences from popular culture as well as her own vocal skills through singing in order to develop her own creative style. She also required teacher intervention at the point of need to unpack her influences and recognise important details which then transcended into her own compositional style. The balance between student agency and teacher intervention enabled Cinderella to progress her project to completion.
Like chapters Five and Six, Chapter Seven also focuses on sub question two, ‘How are students’ multimodal meaning-making capacities enabled by contemporary multimodal pedagogies in music education?’ by foregrounding Brigitta’s journey through the PMP process as she uses the influences of childhood memories to craft a unique multimodal text. In this example, Brigitta differs from both Galaxy Girl and Cinderella as she draws on her memories to recreate a feeling of happiness associated with childhood innocence which she nostalgically recalls. Like Cinderella, Brigitta draws on emotion to foreground her work and focuses heavily on the visual mode to create the emotion and delineate the process. Brigitta provides an example of a skillset which combines that of Galaxy Girl and Cinderella, whereby she is able to both improvise to create meaning organically, while also having extensive skills in analysing musical concepts using metalanguage. Furthermore, Brigitta is a classically trained student who also uses popular music influences and builds upon the skills demonstrated by Cinderella as she modified existing influences to create her own version which better reflected the ideas and feelings she intended to convey.

Structurally similar to the previous two chapters, Chapter Seven introduces Brigitta in detail and follows the process she undertook to complete her PMP. It examines the multimodal design of her PMP before analysing the early, middle and later stages of her audio work using the seven pedagogical affordances as an analytical tool. This chapter provides an insight into Brigitta’s ability to embrace the multimodal process by developing her skills in various modes in order to convey a personal experience in a highly evocative fashion, validating the value of teaching pedagogies which encompass multiple modes and access points.
7.1 Discovering Brigitta

Brigitta was a highly motivated music student, who had been playing the piano since the age of six and the violoncello since the age of 14 (QB20120619). She played the piano for enjoyment, church, and to complete grade examinations. Brigitta also played the cello with the orchestra and sang with the choir. She had even performed percussion parts with the school’s Symphonic Wind Ensemble (Concert Band). Her only experience beyond the previous classroom music composition tasks was writing a piece for her mother (QB20120619). Her experiences with multimodal texts included watching movies, television, advertisements and some YouTube clips (QB20120619). She spent up to two hours per day engaging with these. Brigitta did not identify any other subject areas as utilising multimodal texts in them. She reflected on her experience of creating a Haunted House soundtrack in Year Eight music class and putting pictures and lyrics to a song in Movie Maker as her previous experiences in multimodal creation (QB20120619). This student represents a fusion of the previous two in musical experience as well as engagement with technology. She has a similar level in classical music skills to Galaxy Girl and also possesses the skills of improvisation demonstrated by Cinderella.

7.2 Making meaningful connections by bringing personal interests into the PMP

7.2.1 Multimodal design: Initial stage of the PMP
Unlike Galaxy Girl but similar to Cinderella, Brigitta had not completed any of her PMP over the holiday period, but she had some initial thoughts, which can be seen in her mind map below (PB20120718).

Brigitta’s initial thoughts were mapped out in the linguistic and visual mode representing ideas that drew on ubiquitous learning and indicated that Brigitta was highly interested in and motivated by the positive memories of her childhood past. She was aptly able to associate particular locations and settings to significant family and childhood memories. The nostalgic themes to her composition were evident from the early stages. Similar to the other students, Brigitta was challenged to consider how to represent an abstract concept such as memory through multimodal elements. Her preliminary plan heavily relies on the visual mode with some consideration of the audio.

In Lesson Four, the class completed the activity of watching several video clips from the movie Jaws to foreground multimodal meaning. Brigitta’s reflections after completing this activity, considered possible avenues of meaning-making for her own PMP.
Thoughts after watching clips from Jaws

- I don’t like sharks.
- I would rather do something more cheerful.
- It was interesting how music can affect your moods and feelings.
- The music e.g. when it climaxes, and decrescendos should match what’s happening on the screen (PB20120718).

Brigitta recognised the power of the audio mode in influencing one’s emotions, and the ability for audio tools to punctuate and emphasise the meaning of the visual mode. Her focus on the cheerful and nostalgic becomes a significant area of interest throughout the PMP, as Brigitta draws on an emotional personal experience to sustain an extended level of interest across the project. She shows an ability to transfer knowledge from the class activity to her own PMP and engages in active knowledge making. Brigitta is able to recognise the climaxes and decrescendos conveying a higher level of musical awareness than other students in the Music elective class. In comparing the three students across a spectrum of musical skills, it is clear that the PMP facilitates differentiated learning to target the diverse learning needs of students.

In Lesson Eight, Brigitta outlined her ideas for her PMP. She described the visual content that would make up the bulk of her narrative.

Today in music I started working on the project. I had collected my photos and put them on my USB: I had photos of Sydney Harbour that I took a few years ago on New Year’s Eve. That day/night I also took photos of the fireworks which didn’t come out very well – they are a bit blurry, but I thought they were a bit quirky and cool – I
might be able to add some interesting music to it. I also had a few photos of Perisher Blue and a few photos of my family (their silhouettes) and landscapes from our holiday in Tasmania (PB20120718).

A quick explanation of why I chose these photos:
I don’t have a particular story or narrative that I want to present, but a ‘special place’ to me involves happiness with no worry or care in the world, the innocence of childhood where life seems to be perfect and simple things are ‘magical’, and fun times with my family, most of which happened growing up. That’s why my photos are from my childhood, holidays or places that became traditions. Some of these traditions don’t happen anymore and I miss that, which makes this even more important to me (PB20120718).

In terms of multimodal meaning, Brigitta’s initial inspiration stemmed from the visual mode via means of photographs, which drew heavily on physical locations to evoke pleasant memories of family connection. The reflection above demonstrates metacognition as Brigitta considered the nature of the task and compared it to her own ideas, as seen when she justifies a lack of narrative in favour of representing a special place through images and audio. This project provided Brigitta with an outlet to express and represent something highly personal in a similar way seen in Cinderella’s experience of the PMP. In this lesson, Brigitta began to compile her still images using Movie Maker.

I uploaded my photos into Movie Maker. I used my photos from NYE, as they were more in a chronological order – they started during the day and then gradually light fades into a stunning sunset, then it becomes dark, the lights from the city turn on
and the fireworks start. However, I’m not sure about the order each firework will come in as some are bigger than others and I guess it depends on the music. I also am not sure how long I want each photo on the screen for so I will work on a bit of the music then go back to it (PB20120718).

Brigitta’s multimodal focus was evident during the construction stage of her visuals in which she considered the timings and logical progression of each image to align with audio. She was able to create a narrative outside of the linguistic mode by ordering her New Year’s Eve photos chronologically. Interestingly, she makes connections between the logical progression of the audio elements as demonstrated by her awareness that the audio mode would have an impact on the length of each fireworks image.

In Lesson Nine, Brigitta finalised her decision for a theme to connect the visual mode within her PMP as evident in the portfolio excerpt below.

I had an idea – I wasn’t sure how I would put my pictures from the snow next to the fireworks. I have decided I’ll make it in the life of a child – so the other pictures will be of when she is dreaming of all her favourite places (PB20120718).

Brigitta’s creative idea allowed her to use all of her images and connect them in a meaningful and interesting manner in her PMP. It also allowed for her to explore many possibilities in the audio mode as she created music for the various visual scenes. Brigitta’s interpretation of a special place reveals that she had combined both physical settings with metaphysical experiences of the past. The affordance of active knowledge making is demonstrated by the above insight in her portfolio. Brigitta shows that at
this point in the process she has made a revelatory link between significant visual settings and abstract internal experiences by drawing on notions of childhood, memory and dreams, conveying skills of creativity and problem solving. The sustained focus on *ubiquitous learning* in Brigitta’s PMP where she interprets her special place as an emotional experience reveals the opportunity within the Music elective to represent identities and meaningful moments for students.

In Lesson Ten, Brigitta had planned her narrative and created a video timeline.

It’s split into 4 parts, roughly a minute each.

<table>
<thead>
<tr>
<th>VIDEO</th>
<th>PICTURES</th>
</tr>
</thead>
</table>
| Of scenery – water – park in Neutral Bay, and playground in fast forward. | - The bubbles give a fun childhood feeling.  
- The sunset and the progressions of it, show the progression of time well.  
- as the quality of the photos vary, and also to make the movie more exciting, I have varied the amount of time used on each photo.  
E.g. Short long short long, small firework big firework etc. |
| Photos taken from the unit’s balcony, starting with daylight and ending with the harbour bridge in sunset. | Photos of fireworks  
Photo of Teddy Bear, then my photos of the snow and beach etc., as the girl is ‘dreaming’. |

Like Galaxy Girl, Brigitta planned her visual mode in its entirety prior to commencing audio work. Her timeline shows a consideration of possible multimodal connections.
as she notes movement from one setting to another, considers the technique of fast forward, and the differing lengths of images with a focus on timing which correlates with audio for example, ‘short long, short long’.

As the teacher, it was evident throughout Brigitta’s planning stage that she had a strong grasp of the task requirements, the power of multimodal meaning to represent personal experiences, and a solid base from which to begin composition. Brigitta’s initial stage showed me that she had chosen a substantial and adequately challenging idea for her PMP which would sustain her interest (TRJ20120807). For students like Brigitta who had a strong grasp of task requirements from the outset and followed the scaffolds without teacher intervention, differentiated learning was a powerful tool to provide autonomy and challenge.

7.3 Creating meaning in the audio mode

7.3.1 Early audio work – deliberate decisions meet improvisation

Brigitta began working on the audio mode in Lesson 11 and 12. She had a few technical issues with the equipment in the music technology laboratory not functioning as it should in the previous lesson, so had only been able to experiment with her ideas. In this lesson she began creating her music, had her screen filmed, and had a conversation with me about her PMP. She reflects on some significant audio decisions in the portfolio excerpt below.
Music-wise, the first instrument I picked was piano. I decided to have one piano playing block chords while the other plays arpeggiated chords at the same time. I had to record the arpeggiated chords first though, so I could get the timing right. I did it in C major using the chords I, IV and V. I used C major because it’s a cheerful and simple key (PB20120718).

As Brigitta was a pianist, the use of the piano was to be expected. She demonstrated a good knowledge of music theory by referring to the chords utilised within her chord progression and comparing block chords with ‘arpeggiated’ (broken) chords. Brigitta’s description of C major as ‘cheerful’ was a personal one; and she did not provide justification as to why this key was ‘cheerful’. Brigitta had an astute awareness of the impact of the audio mode and was quicker than Galaxy Girl and Cinderella to engage in accurate analysis of various musical elements. However, the subsequent portfolio excerpt provides a useful insight into Brigitta’s thought process during creative composition, whereby, she outlines a common experience for many music students as she composes music without intense prior analysis of creative decisions. This not only links the process of flow within artistic forms, but also, the excerpt demonstrates that the student recognises the value of teacher directed questions at the point of need to bring forth the creative process from the subliminal to the forefront of their thinking.

In the second half of the double [lesson] my screen was getting filmed and when Mr V came to talk to me the conversation was recorded. When he asked me why I did certain things I wasn’t sure how to answer, because when I make music, I don’t analyse it, I just do it. However, after talking to him I have a bit more of an idea of how to explain it (PB20120718).
Brigitta’s initial concern that she did not know how to respond to my questions about musical composition reflects the apprehension students can initially experience when confronted by challenging questions. However, she valuably recognises that appropriate questions assist her *metacognition* of the learning process as they better inform her analytical thinking skills, use of metalanguage and ability to describe audio ideas in a clear and coherent manner. Through our conversation she was able to feel more comfortable about how to explain what was happening, suggesting that over time students adapt to being asked challenging questions and are able to recognise how these move their learning processes forwards.

Mr V: What can you tell me about your story Brigitta?

Brigitta: Everything is shown from the point of view of a child, and all these photos are taken from New Year’s Eve one year...they were taken when I was younger...just how when you are a child everything is happy and magical.

Mr V: Magical, happy. So, you see things differently as a child?

Brigitta: Yeah, so it starts off at the beginning, so you can see a timeline because it starts off and there are photos of the sunset and it goes into fireworks and then later on, she’s sleeping and she’s dreaming of all these other places that she goes as well. Yeah, at the moment I’m doing the music, I don’t know if it really fits, but yeah (CB20120810).
The initial part of this discussion centres on the story of Brigitta’s PMP. This allows Brigitta to verbalise her ideas about her narrative and for me to have an understanding of the visual and the meanings that Brigitta is trying to create in the audio mode. The next part of the discussion moves onto the music that will accompany the visuals. It begins with some general questions and then attempts to explore some detail through questioning the student.

Mr V: Okay, so what sort of music are you going to create to go with the different moods or scenes?

Brigitta: ...it’s going to be split up so it will be kind of fast paced but playful. This at the moment is more calm and relaxing, and for the fireworks I’m trying to get more of a pop influence, but I haven’t decided that yet.

Mr V: We need to go into more detailed analysis. Let’s talk about your first musical idea, or how your music is going to reflect your first pictures, what type of music are you going to have?

Brigitta: Um, I don’t really know if it’s a type of music...

Mr V: Well, you said happy. What do you associate with happy music?

Brigitta: Major.

Mr V: What’s happy music to you?
Brigitta: Well, I’m not trying to re-enact happy music as such, at the moment I’ve just got a nice tune, that makes you feel calm and relaxed where I was then.

Mr V: So, a nice melody...in a major key?

Brigitta: It’s in a major key.

Mr V: Has it got balanced phrases?

Brigitta: Well they usually do, I don’t know if mine’s very balanced, but...

Mr V: Is it in a high register?

Brigitta: Yes.

Mr V: Is it a narrow range?

Brigitta: It’s quite simple

Mr V: Simple, ok, repetitive? Or every phrase is different?

Brigitta: It’s a bit...it’s kind of improvisational, like if I’m on my piano and I just play a random tune...it doesn’t really have a start or an end, it’s just smooth.
This exchange invites Brigitta to move beyond linguistic descriptors such as ‘happy’ and ‘nice tune’ and engage in more specific audio metalanguage such as identifying key, register, phrasing and range. This *recursive feedback* which occurred early in the MEMTU, intended to develop Brigitta’s confidence in analysing her audio choices. Upon listening to her audio at this point, the details were further unpacked.

**Mr V:** Okay, great. What instrument is playing your melody?

**Brigitta:** A flute.

**Mr V:** Flute, so you have a flute playing the melody. Are the notes long or short?

**Brigitta:** Um...mostly long notes.

**Mr V:** (I sing her melody). Starts with sustained notes, then some shorter notes before more sustained notes. Then you have repetition (sings similar phrase with a little trill at the end), these are beautiful balanced phrases. Okay, so that’s you being creative, and you’ve used the flute, so you’ve associated the flute as a happy instrument. What other instruments do you have there?
Brigitta: Um...well I have 2 pianos, because I have one playing chords and the other playing arpeggios. And then here I bring in the cello, and the bass here, but I don't know if it's going to work so I'm just kind of fiddling around with that, and then these – I've got bubbles in the picture – and I wanted to get like a bright...

Mr V: Yes.

Brigitta: You know what I mean?

Mr V: Yes, so you've used some sort of tinkly bell type thing?

Brigitta: Yeah. Do you know if there's a wind chime, you know where you move the thing across them? Is there one on here?

Mr V: I think it could be under the percussion, on channel 10, it could be one of the notes somewhere on the drum kit, otherwise we can add it as a sound effect.

Brigitta: Okay.

Mr V: ...that's really good. So...okay...you just told me that your happy music has nice pianos, bells, and a beautiful sustained balanced phrase melody in a reasonably high register on the flute. So, you've given me more explanation now, you are starting to analyse where your idea has come from. You started with 'a happy tune', but now...
we are talking about the instruments that make it sound happy, and
you’re thinking maybe I’ll add cello (CB20120810).

In this learning conversation, my questioning began as direct and explicit by asking about the instrument that was playing the melody, and then I broke up the other elements into smaller questions. The initial questions were easy to answer developing Brigitta’s confidence so that I could extend her thinking into the more analytical realm. This part of the discussion also saw Brigitta much more animated. She described how her music compliments the visual mode, adding bells as a bright sound to accompany the bubbles appearing in the images. She was forthcoming in asking her own questions which shifted the exchange from just being recursive feedback to collaborative intelligence as she sourced teacher knowledge to further her creative ideas. I reinforced the fact that she had progressed well and intentionally summated and paraphrased her analytical work to encourage further metacognition and a continuation of this practice.

After our discussion, Brigitta was able to reflect on her musical ideas effectively in her portfolio.

I think one of the most important aspects is the melody. I decided to do a melody over the top of the piano accompaniment, using the flute in a reasonably high register. I find it rather peaceful and soothing as well as joyful. This is like the photos and the story. I am trying to convey the world through a child, where everything is perfect and happy. Apparently, my phrases are balanced and legato, with many long notes.
When I wrote the melody, it was rather ‘improvisational’. It reminds me of how sometimes I sit at my piano and play a random melody I made up in my head, and when I do that it’s normally relaxing and cheerful, which is the same idea I’m trying to get across.

I have added on the percussion line some tinkling sounds – especially on scenes with the bubbles, to try to reinforce the idea of how it’s ‘magical’ as a child.

I also fiddled around with bringing in cello, but I don’t know if I’ll keep that or not.

Once I finish this beginning bit, I should analyse pop music that I may want to replicate for the fireworks section (PB20120810).

This entry in Brigitta’s portfolio demonstrates how recursive feedback and collaborative intelligence can lead to clarity in analytical thinking. Brigitta was able to unpack her ideas using audio metalanguage, so that she could develop them further. Whilst drawing on improvisation for some of the audio, Brigitta clearly identifies a thorough planning process, reflects upon teacher feedback and has a strong capacity for metacognition and reflection in terms of her musical capabilities. Unlike Cinderella’s primarily improvisational style, Brigitta demonstrates the way in which a greater analysis of musical content can add depth to both the planning process and final product.

Brigitta’s work from Lesson 11 and 12 can be viewed here:

In Lesson 13, Brigitta’s reflections reveal a significant development in the use of musical terminology when describing her audio work as seen in the excerpt below.

An idea that I have had for the fireworks section, I would like to have rolls on the timpani and/or cymbals, leading up to each firework, crescendoing and ending on an accent on the first beat of the bar, on the change of pictures. Also, in the first section, when the sun set starts turning a rich orange, I will play some chords/instruments in the bass, to create a warmer, richer sound (PB20120815).

Similar to Galaxy Girl and Cinderella, Brigitta alters the linguistic mode attempting to describe the audio mode through metalanguage such as ‘crescendoing’, which is a combination of the Italian musical term ‘crescendo’ meaning to get louder with the suffix ‘ing’ to change the tense. Interestingly, Brigitta has an acute awareness of how she would like audio elements, such as the timpani and cymbals, to play rather than merely identifying the instrument used. She also considers the impact that the audio elements will have in paralleling the visual mode. At this early stage, Brigitta has an excellent grasp on the connection between the audio and the visual mode and is able to effectively describe them using musical and non-musical terminology.

Brigitta’s work can be viewed here:

Over the weekend Brigitta worked on filming the movie that would complement the still images that she had already compiled. She described her inspiration for the film as revolving around a special place from childhood, as seen in the portfolio excerpt below.

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On the weekend on Sunday, because it was such a beautiful day, I decided it was a perfect opportunity to film the video part of my assignment... My aim therefore, was to walk through the park and film the landscape. I then plan to speed it up.

It was interesting seeing everything because I probably haven’t been there for the past 5 or 6 years at least. There were definitely many childhood memories that came back to me, which is helpful for me to reflect on those emotions/memories through my compositions.

It was odd seeing things and how they were different to how I saw things when I was little – for example, you know how when you are younger, and everything seems a lot bigger (because you’re smaller). And then when you grow older and bigger you realise that the wide streets are actually quite narrow, the vast parklands have shrunk, and you no longer fit properly on the slide in the playground (PB20120818).

Brigitta’s portfolio excerpt demonstrates an engagement with *ubiquitous learning* as she returns to the place of her childhood memory in an attempt to recreate it in film form. She made deeply personal comments about how visiting this place made her feel, and how emotionally connected she was to her PMP. Brigitta’s excursion to her childhood place, not only facilitated deep self-reflection, but provided the engaging stimulus for her visual mode and this *ubiquitous learning* experience continued to resonate with her throughout the PMP process. Her capacity for meaningful self-reflection continued to be aptly demonstrated. In the subsequent portfolio reflection, Brigitta clearly shows this continued engagement when discussing her audio work.
What I did in my compositions today:

...I wasn’t sure how to approach the music for that picture. At first, I thought maybe a brass instrument would work for boldness and if I played a chord it could work well – I picked the French horn because I like its sound and tone. I ended up not recording that but recording it in piano (deciding to come back to it later) but I think I’ll have to go back to that and add the horn, because at the moment the texture is very thin, and I need it to not be, to fit with the picture (PB20120821).

Brigitta examined multiple audio options and was highly judicious in her choices of which sound best accompanied the visual mode conveying an awareness of the relationships between modes in *multimodal meaning*. Her reflection upon the changing process of her decision making demonstrates a strong capacity for trial and error while also substantiating the purpose of improvisation as it provides the opportunity to test various sounds in order to make an accurate selection. Brigitta made connections between the mood that she was trying to create and the quality of the instrumental tone. The visual mode inspired her understanding of the mood required and she flexibly attempted to adapt the audio to suit. The following portfolio extract conveys the value of sustained engagement as Brigitta continues to experiment with the audio mode in an attempt to create the desired sound.

I wanted to show the progression of time (from day to sunset) through the subtle difference in music, such as the pitch and texture. I think the beginning of the piece has a much thinner texture and the melody is in a high register, while in the second half, especially towards the end of the sunset photos, the texture is much thicker with more layers of music, there is more of it played in a lower register, and there
isn’t as much of a gap (distance) between the accompaniment and the melody – it’s more ‘dense’ (PB20120821).

Brigitta’s reflections assist in the process of *active knowledge making* as she describes her choices, changes in decisions, and then trials ideas. The development of her use of metalanguage was rapidly enhanced following initial learning conversations and showcases her extensive ability to analyse and utilise musical terminology.

Brigitta’s work from Lesson 15 can be viewed here:


Thus, Brigitta’s early audio work demonstrates that students who are musically trained are able to more rapidly improvise and analyse in order to create sustained compositions. Similar to Galaxy Girl it is Brigitta’s unwavering engagement with her special place that maintains her standard of work at a very high level. Also, similarly to Cinderella, she draws on a highly emotive *ubiquitous learning* experience from her past, to create a PMP that has personal significance. This enables Brigitta to express and represent a highly meaningful personal concept in a multi-layered way. Brigitta shows a fusion of the skills of the two prior students, and also chooses to use moving images rather than just stills, which distinguishes her PMP as highly original, personal and reflecting higher order thinking and composition skills. Her reflection upon the process coupled with her understanding of the way in which teacher intervention at the point of need can benefit and move her learning forward further suggests the pedagogical legitimacy of a project like the PMP in engaging students.
7.3.2 Middle stage audio work – multimodal momentum through musical influences

Throughout the middle stage audio work, Brigitta’s systematic approach continues to be demonstrated through her detailed analysis of musical influences. The following excerpt shows an example of two of six selected influences in which Brigitta explores the music used by others to accompany fireworks.

I am analysing music that I find on YouTube when I type in ‘fireworks music’, to brainstorm what type of music I may do.

1. This video uses a lot of techno stuff. There are synthesizers, which create a bit of an eerie but interesting sound. There seems to be two guitars (electric) over the top, one doing a melody line and another accompaniment – they both are being plucked and one echoes another. There seems to be a small drum keeping the beat, and there is an instrument in the background that creates a ‘didgeridoo’ sort of vibrating sound. I think it has some eastern influences...

3. Fireworks set to Handel’s music: it gives off a very refined, regal presence, due to the classical music and the shape of it, and also its instruments. It is orchestral, with lots of brass, woodwind, and string instruments. The use of brass gives it a bright sound, and the orchestral music makes it seem important, as well as magical. It has a rather fast pace (PB20120823).

Brigitta’s observations about these influences make use of musical and non-musical terminology and make direct links to her PMP. Brigitta reflects on the audio which compliments the mood of her images as well as determining which elements will not
work in capturing the personal influence she wishes to represent. *Multimodal meaning* is explored as Brigitta analyses how other creators have combined music with fireworks visuals.

In Lesson 18, Brigitta worked on her fireworks section and an excerpt from her reflection is below.

For my fireworks section I got Mr V to find out the tempo by using his metronome app, so I could set the clicker (click track – metronome) to it and play the instruments together in time. The tempo was about \( \text{♩}=123 \).

Once I did that and quickly re-recorded that small section, I liked the sound of it, but I realised it didn’t fit with the fireworks photography. Especially as I remembered that I had changed the timing between the photographs, so it went long, short, long short, etc and I think the music should reflect that...

As a starting point...when the pictures of the fireworks changed, I went up a tone, and when it changed again, I went back again, so it ended up looking like: 

\[ \text{A B A B A}. \]

However, as my reaction time isn’t that great, it wasn’t very accurate and often the next note would come in a few seconds after the change, rather than on the change. So, then what I did was press the ‘enter’ key which zooms into the notes I’d recorded, and I extended/shortened the notes where I needed to by dragging them. This was successful in making the notes bang on each change. So now, next lesson I’ll be able to create my music with these two notes as a guide of the rhythm of it (PB20120827).
This excerpt shows that Brigitta sources collaborative intelligence, particularly to assist with the timing of her audio and visuals. This technological assistance provides a basis for her to create further audio and she is subsequently engaged in active knowledge making as she is able to problem solve, indicated when she aligns the notes to the firework explosion by altering their placement. This portfolio excerpt, in both its detail and capacity for astute reflection, highlights that Brigitta was clearly engaged in the process of the PMP and provides an example of Czikszentmihalyi’s (1997) principle of flow. The PMP enabled Brigitta to practice metacognition through the documenting of her learning process and commenting on reasons for successes, alterations and final decisions. This practice is a skill relevant to learning in any context but particularly poignant when considering the nature and learning within the music classroom.

Brigitta’s work from Lesson 18 can be viewed here:


In Lesson 19, Brigitta continued to work on her fireworks section. She built upon the guide notes she had adjusted in the previous lesson as seen in her reflection below.

I did block chords on the ‘strings ensemble’ and tried to match it up to the rhythm of the pictures. Then I got a brass section and did more arpeggiated chords. I chose a big brass and string section because fireworks are big and explosive, so bursts of loud sound were appropriate (PB20120904).
Brigitta was keen to have the music for the fireworks parallel the images, mirroring the scaffolds from Phase One. Throughout the middle stage audio work, Brigitta has developed the capacity to create *multimodal meaning* by paralleling audio and visual modes, through careful planning, execution, and the assistance of technology.

Brigitta’s work from Lesson 19 can be viewed here:


7.3.3 Later stage audio work – multimodal memories make for independent composition

In the later stage audio work section, Brigitta demonstrates the capacity to work independently by following the scaffolds from Phase One to create her dream scene and the final scene within her PMP.

The night before Lesson 20 and 21, Brigitta recalled her favourite childhood songs and considered how they could accompany her dream scene.

Last night I decided to look for the childhood favourite songs I would use in my composition, for the dream sequence. I looked at songs from Toy Story such as ‘You’ve Got A Friend In Me’ as well as ‘When Somebody Loved Me’, but I decided to go for songs by Kasey Chambers. When I was younger, maybe even in preschool, Kasey Chambers’ song ‘Am I Not Pretty Enough’ was my favourite song, especially because it was my mum’s favourite too. I didn’t understand the lyrics, but I know it had a nice, slow and relaxing tune. It’s a song I remember listening to in the car on long car trips or singing passionately at the top of my voice in my room. I also chose
her song ‘True Colours’ (a cover of Cyndi Lauper’s 1986 version) because I really like the lyrics of it, especially for my film (PB20120907).

In this excerpt, Brigitta demonstrated a strong emotional connection to her two chosen songs that she would rearrange as the music to accompany her dream sequence. Her chosen songs were justified as more meaningful than the songs from childhood movies, because they connected to her relationship with her mother and positive past experiences. This demonstrates the importance of the special place in influencing meaningful and personal creative decisions throughout the PMP.

Following Lesson 20 and 21, Brigitta made musical decisions, as seen in the portfolio excerpt below, about how she can incorporate the two songs into her PMP and fit them within the remaining one-minute of her PMP.

In the music double after working out the keys I would play each song in, I tried to fiddle with the tempo track, so I could play the first song faster, to fit it all in in one minute. However, I couldn’t get that right, so I decided to play without the clicker, playing block chords on the piano. My issue with this was that I couldn’t figure out how to put my melody on top of that for it to be in time, so I tried to do a simple bass line on the cello. That didn’t seem to work, so I decided to go with the melody first. To get the timing right (making sure I didn’t play too fast or too slow) I recorded it roughly on the piano, then I did the real thing on top (I’ll later delete the piano bit) (PB20120907).

Brigitta’s process of working out how to record the instrumental parts was exploratory and emphasises the power of challenges in the creative process to encourage
experimentation with new instruments and methods. She attempted to record the chords, a bass line and then finally the melody line, so that her composition contained multiple layers in synchronisation. By this stage in the MEMTU, Brigitta had gained enough experience to work out an appropriate way to utilise the software to achieve her desired outcome. After successfully recording the piano part she then moved her ideas to other instruments.

One way I’m arranging it is by changing the instruments, so I decided to play the melody in the flute. This is also because in a high register it has a sweet, calming tone, which I thought would be good for this ‘dreaming’ section. As a nice follow up from the first song I decided to play the second song on the clarinet, because I love the sound of that instrument, and I thought that, as it’s a change in key, a change in instrument would also be suitable (PB20120907).

These choices of instrumental arrangements reflect the emotional connections that Brigitta portrayed in the visuals and the context of her PMP. This demonstrates the power of active knowledge making as Brigitta not only develops her compositional ideas but utilises appropriate metalanguage to describe them. Brigitta continues to reflect and refine her ideas throughout the later stage audio work as seen in her reflection below.

Later in the day I was thinking about it, and I realised I had been approaching it the wrong way – I was trying to put it into a 4/4 beat, but the song doesn’t fit like that which is why the tempo track didn’t help me. Singing it in my head and tapping the beat I realised it needed to be syncopated, going \( \frac{1}{2} 2 \frac{1}{2} 3 \frac{1}{2} 2 \frac{1}{2} 3 \frac{1}{2}, 3 \) beats per bar, I
guess. This realisation helped me to work out a better bongo pattern also
(PB20120907).

Brigitta was heavily invested in creating a high quality PMP and reflected upon her
work in detail after lessons. Her musical recognition of the subdivision within the 4/4
bar of 3+3+2 quaver pulses for the songs, particularly True Colours, was an example
of exploratory learning not requiring the teacher to give her the answers. Brigitta was
becoming much more confident in her abilities to solve any issues she had and required
little guidance from the teacher with her work. In the following portfolio excerpt,
Brigitta unpacks her *active knowledge making* process in detail.

I want it to be more acoustic sounding, so I looked for instruments such as the
acoustic guitar and acoustic bass. I started with the bass line where I put ascending
broken chords, in a somewhat syncopated rhythm. There is a song called ‘Stars
Collide’ by Colby Callait where the guitar also plays some syncopated plucking and
what I’ve done isn’t in the same rhythm, but that’s where I got my inspiration from.
I wanted to play an acoustic guitar to give it more texture and layer of sound. I
decided to introduce this at the beginning of the 2\textsuperscript{nd} section of ‘True Colours’ so that
there was a build-up – it’s more interesting than having it from the very start. I rolled
off each chord rather than playing a straight block chord, because in real life if you
were playing a guitar, if you were strumming slower almost as if it was being rolled
off, rather than hitting the chord hard and fast (PB20120910).

Brigitta’s reflection demonstrates how her audio influences were incorporated into her
PMP. Her reflection is indicative of her following the scaffold of unpacking her
influences and reassembling them to add *multimodal meaning*. Her considerations
demonstrate high level musical awareness as she considered how a guitar would be played idiomatically rather than just playing it on a keyboard.

Brigitta’s work from Lesson 22 can be viewed here:

After completing the visuals for her final movie scene at home, Brigitta brought her work to school and spent some time before school and at lunchtime completing the music for this section.

For the very beginning I decided I wouldn’t start the music until the camera went around the corner, where I would do a pretty ‘run-like’ sequence, on piano for now.

To fill the silence before she turned the corner, I looked at using violin, but I decided to instead put some chirping bird sound effects, which I think effectively conveys the peacefulness that would have been there. Also, for the section where the sun is shining on the water, I did a tinkly bit on the piano (PB20120919).

Brigitta composed for the movie section by paralleling deliberate audio ideas to represent actions that occur in the visual. Even towards the end of the MEMTU, Brigitta utilised linguistic descriptors alongside musical terminology to assist in explaining her audio choices. This reveals a similarity between the three students chosen as samples and reinforces the interconnectedness of the modes. Brigitta experienced some difficulties when creating the audio mode for the final scene and tried to solve them by drawing a flowchart as seen in the portfolio excerpt below.
I think that before, I was trying to do something really fast to make it playful, but it needs to be free and peaceful as well, so I think I’ll do light staccato but not worry about trying to make it fast, otherwise I’ll get too stressed and the music won’t be flowing (PB20120919).

Brigitta was able to evaluate the type of music she had been trying to create and work out why it did not work in this section (it was too fast for her to play). She also considered how she could achieve her goal of creating playful music, by using light staccatos, and decided that it did not have to be too fast as this would be stressful to record correctly. This demonstrated how Brigitta enacted metacognition to reflect upon her ability and the plausibility of executing her intentions. At this late stage, Brigitta turned to visual and linguistics to help clarify her intended multimodal meaning.

Brigitta’s work before the final lesson can be viewed here:


As Brigitta finished her final audio touches, she made connections between influences from a recent orchestra rehearsal and her creation as seen in the portfolio excerpt below.
There was another gap, and then for the next moving bit I copy and pasted the piano bit again. This time I decided to do chords, using the clarinet and flute. I actually got this idea yesterday during orchestra rehearsal. I can’t remember which piece it was, but I heard it and liked how the two instruments complement each other when playing a third apart from each other for example (PB20120921).

Brigitta was now able to synthesize her ideas efficiently and effectively, drawing connections between her intended meaning in her visuals and how to create this in the audio mode. She organically made connections to influences gained outside of the music classroom, for example the part she liked on the flute and clarinet from the piece played in orchestra rehearsal. This demonstrates a development in her compositional skills from much earlier in the unit of work.

Brigitta did not work on her linguistic mode throughout the entire unit of work but in the final moments of the PMP creation she found that it was an important way to tie together her ideas and convey them to the audience as seen in the portfolio excerpt below.

My ideas for my linguistic mode:
- a quote in italics
- black background, white writing
- at the beginning of my video
- about the ‘perfect’ world of childhood
I wrote something like, ‘the world is only perfect when seen through a child’s eyes and dreams’ – reference to the dreaming sequence.

It’s now saved and finished – a day through the eyes of a child! (PB20120921).

The use of the short quote at the beginning of her PMP gives the viewer an insight into what it is about. It is particularly poignant as it reflects on the way Brigitta feels about the world before she understood that things are not always perfect. The PMP process allowed Brigitta to engage in self-exploration and reflection into her past to validate the true meaning of her chosen special place. The later stage audio work shows that she continued to develop her audio metalanguage and refine the multimodal links and relationships using technology up until the conclusion of the project.

Brigitta’s completed PMP can be viewed here:

https://vimeo.com/176904398

7.4 Conclusion

Brigitta is an example of a student who was able to be challenged and engaged throughout the entirety of the MEMTU. Brigitta was able to combine her classical training and experimental style whilst still being motivated and interested in learning new technologies and approaches to the composition of music. Her process shows that through innovative teaching practice such as in the MEMTU, and the use of modern technologies, higher-order thinking is promoted, and students are effectively challenged. The MEMTU as examined through Brigitta’s PMP, reveals how the seven
pedagogical affordances (Cope & Kalantzis 2013) can be enacted in the Music elective.

Brigitta’s aptitude for self-reflection was highly impressive and her portfolio demonstrates that documenting her thoughts and processes assisted with a pointed critique and the enhancement of her final product. The MEMTU allowed this student to express a strong innate emotional connection that was associated with feelings of nostalgia towards her special place. The reflective process also enabled Brigitta to contemplate and work through challenges as they arose, and she benefited from reflecting on mistakes as it encouraged her to adopt an altered approach within the given mode of her composition. Furthermore, Brigitta’s sophisticated analysis and metalanguage demonstrates that the MEMTU pedagogical approach caters to the diverse learning needs of students, including those who are already highly skilled in musical composition. The multimodal approach employed in my pedagogy facilitated the extension of Brigitta’s music abilities by challenging her to integrate these skills with those developed in other key learning areas. Additionally, the PMP encouraged an extension of Brigitta’s metalanguage providing her the linguistic tools to effectively describe and analyse the audio mode, while her capacity to use technology was enhanced by the multimodality of the task enabling her to learn digital skills which she then employed to experiment with new approaches to conveying meaning through the form of multimodal storytelling.

Unlike Galaxy Girl who was inspired primarily by the linguistic mode, Brigitta initially drew her inspiration from the visual mode and was able to systematically and carefully choose the most appropriate elements of the audio mode in order to convey the atmosphere and tone to her final composition. The highly emotive quality of
Brigitta’s visual and audio were inspired by and stem from real memories of her childhood. The nostalgia created and represented was integrated in all the modes, providing a rich, dynamic and incredibly meaningful piece of work which drew on the student’s personal interests and experiences but also enabled her to extend her skillset incorporating technologies and mechanisms for creating carefully chosen audio. In the contemporary classroom setting, the increased reliance on technology and the creation of audio through digital means requires students to possess the resilience to engage in trial and error, a systematic approach to planning the creation of sounds as well as the ability to recognise which technological device or software will best mirror the audio they already know or wish to represent. For students like Brigitta, who are trained in classical music, and are able to develop confidence in experimentation, the MEMTU process is a highly valuable experience as it broadens their scope for making connections across various modes and allows them to explore the potential of technology in replicating and creating the desired audio within their creative compositions.

Similar to Cinderella and Galaxy Girl, Brigitta benefited greatly from teacher intervention at the point of need reflecting the necessity for targeted teacher instruction, discussion and intervention whereby critical questions aimed at broadening the depth and breadth of student responses, are fundamental in encouraging students to take creative risks, maintaining motivation, and broadening their skillset in analysis and opening their perspective to creative opportunities.

The multilayered approach required in the PMP was one of the aspects which were paramount in challenging Brigitta to extend her skills in analysis, reflection and composition. However, of even greater value was Brigitta’s ability to use audio to
accompany both the visual and linguistic modes in representing a treasured place of
her past, conveying the ability of a school-based task to adhere to student personal
interests and experiences, contextual influences, and provide them with the
opportunity to engage in meaningful personal reflection whilst also gaining content
knowledge and skills. The audio in Brigitta’s work, as seen in her portfolio reflections,
was a highly important factor in creating the atmosphere required to accurately
represent her childhood memories; a facet which would not be as beneficial in a
monomodal task.

The following chapter presents final thoughts about the PMPs and the findings and
recommendations of the study.
8. Concluding discussion and findings

The previous three chapters examined the ways in which three individual students created their PMP throughout the MEMTU. They draw attention to the individual order of design construction that each student applied when creating their PMP. They examine the enactments of the students as they engaged with contemporary multimodal pedagogies, in particular how the students built upon their analytical work to actively create multimodal meaning in the form of the PMP.

This chapter discusses the success of the PMP in engaging Music elective students, and outlines the findings of the study, providing recommendations for researchers, literacy educators, music educators and those interested in multimodal approaches to teaching and learning.

The study explored contemporary multimodal pedagogies within a Year 10 Music elective. It utilised elements from music and technology, facilitating engaging multimodal learning experiences with a focus on the audio mode. The Music Elective Multimodal Technology Unit (MEMTU) had two overlapping phases. Phase One entailed students collaboratively learning analysis and composition skills pertaining to multimodal content. Phase Two saw students using the skills from Phase One when creating their PMP, where their personal interests directed the learning process and inspired their compositions. Technology was used to assist students in making meaning in multiple modes. It enabled students to create and combine multimodal content while drawing on personal interests and experiences.
One primary question framed this research:

*How can contemporary multimodal pedagogies in music education enable students’ meaning-making capacities?*

The following supporting sub questions were investigated to supplement the primary question:

1. How can contemporary multimodal pedagogies be enacted in music education?
2. How are students’ multimodal meaning-making capacities enabled by contemporary multimodal pedagogies in music education?

Following the data collection, analysis and reflection the findings can be summarised as follows:

1. Innovative teaching incorporates technology and invites innovative learning.
2. Multimodality and differentiation enable student development of metalanguage to describe the audio within multimodal contexts.
3. Engagement with personalised multimodal content stimulates the creative process.
4. Incorporating modes beyond the audio into the music classroom challenges the roles of the music educator.
5. Audio literacy is enriched when multimodal meaning capacities are complemented by the seven pedagogical affordances.

### 8.1 A final word about the PMPs

The three students’ PMPs selected for detailed study, typify the variety of narratives and the individuality of content and design within the Music elective. They demonstrate how a task that is personal and meaningful to the individual student can promote deep engagement and exploratory learning across multiple modes of meaning. As students engaged with the contemporary multimodal pedagogies they were able to...
analyse the audio, visual, linguistic and multimodal, examining and creating meaning in individual and multiple modes. Students largely complemented or paralleled the meanings between modes and were mostly effective with their choices.

The order of design for the students displayed some similarities with most PMPs driven by the visual mode, although some students created a fixed visual mode narrative whereas others left the timeline much more flexible and did not fix the visual mode until the end of the project. The students created their audio mode to accompany and add meaning to the already created or pre-conceived meaning of the visual mode. They were able to utilise vernacular and musical terminology to describe how meaning was occurring throughout their PMP and their influences. The development of appropriate metalanguage for the audio mode within Music education occurred throughout the MEMTU as the students interacted with each other and the teacher to describe the audio mode within their influences and their projects.

Whilst the pedagogies were designed with the intention to allow students to build upon a modelled method, interrogate their own content, and manipulate the ideas grasped in new ways suitable to their PMPs, they have embodied Cope and Kalantzis’s seven pedagogical affordances (2013). Throughout the MEMTU it can be seen that the seven pedagogical affordances intertwine and rarely, if ever, worked individually. The students and teacher worked collaboratively to design meanings, reflected metacognitively on multimodal influences and feedback in a differentiated learning environment that extended beyond the classroom into the students’ personal interests and experiences. The MEMTU, as an example of utilising contemporary multimodal pedagogies, offers a new alternative to the teaching of multimodal literacy and emphasises the contribution that music educators can make to the teaching and
development of a metalanguage to describe the audio mode. It also highlights that multimodal projects, that usually focus on the linguistic and visual mode, can be shifted to focus on the audio mode.

There was considerable uncertainty about what to expect in each lesson due to the variety of student driven content, the different order of construction, and the varying levels of understanding, and musical and technological ability that were present. This required teacher flexibility when adapting to the requirements of the individual students within the MEMTU. This was a change to traditional teacher-led pedagogies, and it was rewarding to work with the students and their personal interests. It required the confidence to go beyond traditional pedagogical methods and instead work alongside students towards a common objective. Music teachers are well equipped to deal with uncertainty through improvisation as in the music profession this is a necessary skill. This project was comparable to the experience of bringing together the various skills and talents of students within an ensemble, and like a conductor leading them in a common yet unique direction whilst also encouraging the development of musical talent and skill. It is very difficult to precisely replicate a performance, and in the same way the pedagogies required for each student are not constant. They are a capricious living and breathing interaction that occurs organically and can change at a moment’s notice. The PMPs were created through the malleable interactions that occurred between the students, their peers and I as we travelled on a journey of multimodal discovery within the Music elective.

The pedagogical and personal interactions I had with the three selected students provided me with valuable insights into student learning, but more so into the differentiated teaching practices required to profoundly engage students. They taught
me the value of teacher intervention at the point of need, even for students who are engaged in the task, as they benefited greatly from conversations that extended their thinking.

Multimodality provided equity as all students were acquiring a new representational platform which encompassed multiple modes, allowing for student access from various avenues and perspectives. The project showed me the value of the multimodal in allowing students of all abilities to engage in a highly meaningful task which enabled them to learn via the audio mode and represent a personal aspect of their lives.

The parameters of the PMP also benefited highly capable students who came from a classical musical context. With these students, I learned the value of co-creation and furthered a new pedagogical approach which encompassed collaborative intelligence. My interactions solidified my belief that music teachers can greatly benefit from approaching the classroom from an alternate perspective, whereby, they are uninhibited by uncertainty and embrace the risk associated with co-collaborating with students. This approach extended and enriched the highly capable students through the transformation of personal experiences into a tangible multimodal creation, exemplifying the process of flow (Czikszentmihalyi 1997).

All three girls provided me with a unique insight into the teaching and learning process and each impacted upon my role as a teacher and researcher. As a teacher, I invited the students into a learning space in which their final outcome was unpredictable, again necessitating the value of improvisation and being open to student-directed interests. Each student enabled me to shape and reshape my approach to teaching metalinguage and music terminology, and I was moved to a new pedagogical space when working
with each of the corresponding modes. As each mode came together for each student, it was evident that the process of improvisation, intervention at the point of need, and co-creation worked uniquely for each student and rewardingly, they each produced a completely distinctive and wholeheartedly meaningful PMPs they were proud of. All of which was made possible through the process of teacher reflection which I engaged in on a daily basis during and following the lesson. This reflection enabled me to gain the confidence required to strip away traditional pedagogical practice pertaining to teacher-led lessons and become comfortable with moment by moment, student-centred and needs based approaches which have continued to enhance my pedagogy to date. I learned that while the creation of music in the elective was an important audio skill, the multimodal approach and the explicit teaching of the required technologies, not only enabled students to access their talent within certain modes, but most importantly, allowed them to draw on intensely meaningful experiences which continued to facilitate their engagement in the creative process.

8.2 Findings

Finding 1 – Innovative teaching incorporates technology and invites innovative learning.

The pedagogical approaches that underpinned the MEMTU, as described in Chapter Four, altered the typically monomodal approach of both teachers and learners within the Music elective. They allowed for innovative teaching to occur and for students to learn in innovative ways that are not always associated with the learning that occurs in secondary music education.
Firstly, the incorporation of the visual, linguistic and audio modes into a subject that normally privileges the audio mode created an opportunity for students to attend to modes other than the audio. When creating audio, students were able to draw upon meanings from the visual mode such as paralleling visual and audio (exemplified in Chapter Seven) and complementing visual and audio (exemplified in Chapter Six). The students were able to use the visual and linguistic modes to inspire their creation of audio.

In using the visual and linguistic modes as inspiration, students were able to draw upon their previous experiences and interests to inspire their audio mode composition. Familiar influences allowed the students to work in a highly relevant space and to utilise their personal interests inside the school classroom. The incorporation of students’ personal interests into the Music elective created a learning environment that was highly engaging for students as evidenced in their portfolio reflections (see Chapters Five, Six and Seven).

These multimodal innovative teaching practices were possible due to the availability of technology within the Music elective. Technology enabled access to students of varied abilities into the analysis and creation of multiple musical styles. Students were able to assemble their visual and linguistic modes and accompany them with an audio soundtrack using a variety of software, hardware and websites (Cubase, Windows Movie Maker, Pinnacle, and Xtranormal as described in Chapter Four). Despite having the ability to record live audio using real instruments and their own voices, all of the students preferred to use the technological tools to record midi data using the midi keyboard (see Chapters Four, Five and Six) and computer-generated voiceovers for
narration (see Chapter Six). Whilst the technology used in the MEMTU was cutting edge at the time of the data collection, with the rapid progression of technology the tools required for this sort of project are more readily available and accessible to schools and students.

The MEMTU created an environment where the music teacher could adopt the role of a co-creator who worked alongside students. The use of technology generated opportunities for interactive personal discussions at the point of need, as students made decisions about their PMP. At the forefront of the MEMTU, was the modelled example which demonstrated risk taking by the teacher and sharing of personal interests that would not normally be shared within the elective. This process impacted on the classroom dynamic and encouraged the exploration of metalanguage to describe the audio mode within a multimodal context through group and individual activities. Much of the teaching was highly individualised and catered to the interests and needs of students.

Recommendation: Innovative pedagogical frameworks that foster a multimodal approach to learning through incorporation of technology should be considered by music educators to allow for multiple access points and the incorporation of student interests and experiences from outside the classroom.

Finding 2 – Multimodality and differentiation enable student development of metalanguage to describe the audio within multimodal contexts
The engagement with multimodality required within the Music elective enabled students to cultivate their skills, utilising metalanguage to describe the audio when analysing and composing. In particular, the constraints and requirements of the PMP, as explained in Chapter Four, provided flexibility for students with different musical skills. The metalanguage employed utilised conventional musical terminology coupled with vernacular language to describe the audio meanings intended within student texts. Students’ audio influences were discussed through the remixing of formal musical terminology as well as encompassing linguistic descriptions of specific sounds. By making connections between the modes, students created descriptive audio metalanguage to specifically explain the meaning that was present in their own PMP and other multimodal texts.

Students of different musical skill levels were able to utilise and develop their metalanguage to describe the audio within multimodal texts. This was enabled by the individualised nature of the task, with students’ personal interests being the driving factor for multimodal choices. Additionally, due to the specificity and difference of each student’s musical skills and learning needs, the MEMTU provided parameters, individualised and class discussions that included targeted questions, and reflective opportunities which explicitly addressed each student’s challenges in the creative process. Individualised conversations with students enabled the teacher to direct students to reflect on their audio choices, enabling the unique development of metalanguage for each student. Despite students operating at different levels of musical ability, the MEMTU demonstrated that all students could be encouraged to improve their skills by focussing on individualised and differentiated practice.
Recommendation – Differentiated multimodal teaching and learning that allows discussion using conventional musical and vernacular language are recommended as a means of enhancing audio metalanguage for diverse students.

Finding 3 – Engagement with personalised multimodal content stimulates the creative process

A personalised multimodal approach that incorporates students’ personal interests and experiences supported creation of personal narratives characterised by diverse visual, linguistic and audio representative choices. These representative choices included memories of childhood, relationships, and other personal interests and experiences.

Engagement with the multimodal gave students opportunities to create audio through access offered by other modes. The multimodal compositional process placed value on the students’ interests and experiences resulting in a more student-centred environment. Teacher facilitation and co-creation through learning conversations, encouraged and supported students’ creative journeys. Students were encouraged to draw on their strengths and were heavily invested in sharing their feelings and emotions pertaining to their personal interests.

Additionally, the multimodal approach did not negate student skills in musical composition, as evident in Finding Two. It created an environment in which the stronger musicians had to move beyond their habitual monomodal learning focus and engage creatively within a broader multimodal music meaning-making learning environment. This study found that creativity within a multimodal pedagogical
approach was one of the factors which bridged the gap between the classically trained and popular musicians in the Music elective. The reason for this being that students were encouraged to incorporate personally meaningful content. For instance, students were able to draw upon their classical training (see Chapter Five) or approach the composition process in the manner of a popular trained musician, (see Chapter Six). Both approaches produced highly creative and no less valued PMP drawing upon personal music influences.

Analysis of student compositional processes and products showed that as students were not just focused on audio, they could include objects, feelings and emotions represented in other modes. Through descriptions of the nuances of the audio mode, the capacity of the mode to symbolically represent emotions and personal experiences, became apparent. The students’ work demonstrated the potential for musical notes to be malleable, similar to paint in art, whereby, depending on the intended meaning, notes can be shifted and transformed to represent emotions, interests and experiences particularly when inspired by and coupled with other modes.

Recommendation – Teachers should allow students to engage with personalised multimodal content that draws on interests, emotions and experiences as a means of stimulating the creative process.

Finding 4 – Incorporating modes beyond the audio into the music classroom challenges the roles of the music educator
Within the multimodal parameters of the MEMTU, teaching more than just the audio mode challenged the music educator to engage with the meaning-making potentials of the visual and linguistic modes and their interrelationship with audio. Whilst privileging the audio mode, the MEMTU required the educator to draw on the meaning-making capacities of the visual and linguistic modes.

A pedagogical approach requiring the teacher to assume the role of learner and create a modelled example of the final product, provided insights into potential issues facing student creators. It also required that the educator had a strong understanding of the technological components of the unit and could harness these skills to later assist students in the creation of their PMP. The MEMTU also challenged the educator to share his personal interests with students through development of a PMP, and revealing personal interests including a love of travel, ukulele playing and light-hearted humour.

Seeing a completed model prompted students to consider how they could harness technology to create their own PMP. It also engendered an expectation that students share their interests and an environment in which it was safe to do so. The PMP also allowed the building of stronger connections with students, who appreciated the value that the educator placed on their individual knowledge and areas of interest. This is particularly relevant in music education as communicating meaning and emotion are key elements of successful performers and composers.

While Phase One of the MEMTU, discussed in Chapter Four, was more teacher-led, Phase Two invited students to take the lead in the process of creating their PMP. This resulted in the educator being required to take a step back from the process of creation
and allow students to make and rectify mistakes prior to the teacher intervening. It was found that this encouraged divergent approaches to creation of individual PMPs whereby students experimented with different strategies for creation, including selecting instruments that the teacher may not have recommended, and produced individual products.

The uncertainty created for the educator regarding less familiar modes afforded students with the opportunity to bring influences, ideas, and skills into the classroom which would not occur as readily in a lesson focussed solely on the audio mode. The uncertainty as to what students would present was a primary challenge for the music educator, requiring improvisation, as evidenced for example in discussions and demonstrations on the keyboard in Chapter Five.

The music educator was required to respond to students in the moment and at the point of need, as the differentiated nature of the content and skills demonstrated meant that interactions with each student were both unique and targeted. The discussions, process of co-creation, and the encountering of previously unfamiliar musical influences during the student-led Phase Two challenged the educator to quickly respond to students with individualised feedback. The result of this was that students were privy to the creation process, benefiting from the teacher’s perspectives and knowledge and enhancing their metalanguage as a result of analytical discussions with the teacher (see Chapters Five, Six and Seven).

The broader multimodal approach offered by the MEMTU challenges the music educator to embed literacy outcomes in the forefront of their planning and pedagogy. Additionally, the ongoing challenge presented by the evolution of technology in a
rapidly changing digital age, also requires the music educator to be upskilled the technological components of multiple modes and how they can interact with the audio mode.

Recommendation – It is recommended that Music educators adopt flexible teaching practices and embrace uncertainty incorporating modes of meaning beyond the audio, as a means of engaging contemporary students. It is further recommended that teachers model creation processes when implementing modes beyond the audio. Teachers would benefit from embracing the challenge of responding to student questions at the point of need. By engaging in co-creation teachers engender confidence, provide students with insight into the creation process, and encourage them to think critically about their creative decisions. Music educators should contribute to the development of understanding of the audio mode beyond the music classroom.

Finding 5 – Audio literacy is enriched when multimodal meaning-making capacities are complemented by the seven pedagogical affordances.

The seven pedagogical affordances (Cope & Kalantzis 2013), provide key focus points for analysis and pedagogical considerations which effectively enhance audio literacy and multimodal meaning-making capacities more generally. In this study, the seven pedagogical affordances were primarily used as an analytical tool following the design and implementation of the case study.
When examining the nature of the teaching and learning interventions throughout the MEMTU, the seven pedagogical affordances are apparent, with different emphasis and operating in various combinations across the different components of the unit of work, often co-existing.

With an emphasis on enhancing audio literacy through engagement with multiple modes of meaning, this thesis foregrounds and explores *multimodal meaning-making* and its value within music education. Finding Two demonstrates the connection between multimodality and differentiation. *Differentiated learning* was the foundation for the design of the MEMTU and this thesis demonstrated that incorporation of students’ personal interests and experiences, and individual students’ unique learning needs, trajectories and pace, dictated teaching interactions.

The PMP extended learning beyond the confines of the classroom and when analysed through the affordance of *ubiquitous learning*, it was clear that to engage students in personal creative endeavours, inspiration sought from influences and contexts beyond traditional schooling practices enhanced engagement.

The process of *active knowledge making* was evident in the fostering of innovation, creativity and problem solving in the moment. By allowing students to learn through doing, the PMP emphasised the value of knowledge making through a technologically enriched unit. Students demonstrated the development of audio capacities through improvisation, reviewing of choices, and multi-layered compositional processes. Students’ *active knowledge making* is enhanced by technological tools, which help to facilitate their creative process.
The formative assessment processes incorporated in the MEMTU clearly demonstrated the affordance of *recursive feedback*. Teacher discussion provided feedback and enabled students to develop deeper understandings and progress their learning. The shared metalanguage created significantly enhanced the development of audio literacies and the composition skills of students.

The shifting of the role of the music teacher to that of a collaborator, discussed in Finding Four, enabled *collaborative intelligence*. Chapter Seven, provides a poignant example of in the moment co-collaboration which assisted a student with significant musical ability to extend her metalanguage and composition skills beyond the known.

Many examples of student *metacognition* were evident in student journals. Pointed explanations for audio choices that correlated with specific emotions, conveyed the self-corrective and self-questioning approach which successfully promoted new knowledge through an experiential process (see Chapter Six). Additionally, the discussions between the teacher and students prompted metacognitive responses such as the decision to eliminate the majority of the linguistic mode for the purpose of achieving a more authentic representation of her special place (as seen in Chapter Five). This reflective process required students to question and justify specific audio decisions.

*Recommendation: It is recommended that teachers consider the seven pedagogical affordances and their interrelationship when designing and evaluating units of work. It is further recommended that educators use the seven affordances as an analytical frame for research on their practice.*

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8.3 Limitations of the study

The study was conducted by a teacher-researcher in one unit of work trialled in one Music elective class. Hence, the limitations of the study include its size and scope, and its deployment in an optional Music elective when exploring multimodality. Another potential limitation is that the researcher was the only teacher. Other expertise could have been sought from subject areas outside of music to better comprehend the skills and resources of the visual and linguistic modes. Limitations also included the context of a privileged school with access to technology laboratories, however, with advances in technology, BYOD policies and government funding, many schools now have access to the technology used within the study.
8.4 Future directions of research

It is recommended that future research consider the audio mode at least to the same extent as other modes in multimodal education studies. Multimodal pedagogical approaches which focus on the interrelationship between teacher pedagogy and student understanding would also be beneficial for future research so as to keep pace with technological advancements. Considering the personal influences of students is also a useful area to focus studies which pertain to engagement and motivation as well as skills acquisition. Furthermore, the link between teacher pedagogy and student metalanguage, particularly in the audio areas of multimodal meaning-making and interdisciplinary work would benefit from greater exploration.

8.5 The implications of the study for the teacher-researcher

Throughout the study, I was faced with both the opportunity and challenge of exploring new pedagogical approaches that broadened my usual scope of content and skills. The experience of researching an innovative project has altered the way in which I approach pedagogy, as I now favour teaching methods which bring student interests and influences into the classroom. I am more open to experimenting with students rather than feeling the necessity to at all times demonstrate highly skilful musical composition. This approach encourages students to value their ideas and to learn from, rather than fear, their mistakes. Six years after the data collection within the ME MTU, my courses are more student-driven, based on their needs, and individualised to cater to their skill levels. I frequently refer to modes beyond the audio when analysing, composing and performing, and have found that these have enriched my teaching.
With ever-evolving technological advancements, the possibilities within music education continue to develop and I am excited about the potential this holds for exposing students in all schools to pedagogies that utilise multimodal meaning-making.

I had always considered the use of imagery when composing and performing, however, engaging in this research has solidified for me the importance of multimodal connections as a means to effectively express the audio mode. The study provided reasons for me to consider the distinct purposes of music, as it comprised the audio mode within a multimodal piece. The realisation of the ability of the audio mode to trigger connections with the senses beyond hearing, with experiences such as memory, has significantly impacted my work as a music composer and performer. Much like the process for students in the MEMTU, when I experience an instance of significant personal meaning, I attempt to analyse the elements of the audio and other modes of meaning that trigger such sensations. Moreover, I am able to utilise them to evoke particular themes and emotions in my composition work.

The opportunity to expand my role from teacher to researcher enabled me to consider the broader implications of data collection, analysis and reporting of findings of this thesis. I feel privileged to contribute to the body of literature which explores multimodality and will continue to champion the significance of the audio mode and its implications within multimodal texts throughout my further research and teaching practice. I am excited about opportunities to further explore multimodal pedagogical approaches within varied educational contexts.
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10. Appendices

Appendix A: Codes

MEMTU: Music Elective Multimodal Technology Unit

PMP: Personal Multimodal Presentation

TRJ – teacher reflective journal

CB – learning conversation with Brigitta

CBi – learning conversation with Bindi

CC – learning conversation with Cinderella

CD – class discussion

CE – learning conversation with Elektra

CE – learning conversation with Ezra

CGG – learning conversation with Galaxy Girl

PB – portfolio Brigitta

PC – portfolio Cinderella

PEz – portfolio Ezra

PGG – portfolio Galaxy Girl

PK – portfolio Kayla

QB – profile survey Brigitta

QC – profile survey Cinderella

QGG – profile survey Galaxy Girl

VGG – video observation Galaxy Girl

Dates are indicated by year, month, day e.g. 20120622 is year 2012, month June, day 22nd.
## Appendix B – Outline of the MEMTU lesson sequence

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Date</th>
<th>Description of lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>19 June 2012</td>
<td>Introduction of my personalised multimodal presentation. Discussion of visual, linguistic and audio modes. Hand out project parameters and set image collection task for presentation. Hand out music/technology profiles</td>
</tr>
<tr>
<td>2, 3</td>
<td>22 June 2012</td>
<td><strong>Analysing and creating in multimodal contexts</strong>&lt;br&gt;Watch six cartoons (Popeye, Donald Duck camping, Pluto and the Stork) and discuss the use of the audio mode in augmenting the visual and linguistic modes.&lt;br&gt;Watch Mickey Mouse band cartoon (without the sound) and create the audio soundtrack for the cartoon in groups.</td>
</tr>
<tr>
<td>4</td>
<td>18 July 2012</td>
<td><strong>Revisiting task parameters and modes</strong>&lt;br&gt;Write in portfolios about ideas.&lt;br&gt;Watch the scene from Jaws without the sound and identify the meanings conveyed by the visuals prior to Jaws appearing.</td>
</tr>
<tr>
<td>5</td>
<td>20 July 2012</td>
<td><strong>Technology for creating visual and linguistic</strong>&lt;br&gt;Demonstrate use of software for creating visual and linguistic presentation.&lt;br&gt;Discuss and create audio mode accompaniments to different scenes as suggested by teacher and students.</td>
</tr>
<tr>
<td>6, 7</td>
<td>27 July 2012</td>
<td><strong>Completing the visual and linguistic, and technology for the audio mode</strong>&lt;br&gt;Students complete the visual and linguistic mode of their multimodal presentation.&lt;br&gt;Demonstration of Cubase software for creating the audio mode in the personal multimodal presentation.</td>
</tr>
<tr>
<td>8</td>
<td>1 August 2012</td>
<td><strong>Individual work on PMP</strong>&lt;br&gt;Discussion about the important aspects of the creation of the audio mode.&lt;br&gt;Students commence their work in Cubase.&lt;br&gt;Watch several television advertisements and analyse the relationship between the audio, visual and linguistic modes (did not do this part due to missed lessons).</td>
</tr>
<tr>
<td>9</td>
<td>3 August 2012</td>
<td><strong>Explaining student PMP and continuing individual work</strong>&lt;br&gt;Students outline their story, compose a timeline/storyboard of their PMP, and describe how the story represents an important place and has personal meaning to them.</td>
</tr>
<tr>
<td>10</td>
<td>7 August 2012</td>
<td><strong>Individual work on PMP</strong>&lt;br&gt;Students continue their work in Cubase, or visual/linguistic software</td>
</tr>
<tr>
<td>11, 12</td>
<td>10 August 2012</td>
<td><strong>Using Cubase in more detail</strong>&lt;br&gt;Discussion about the creation of the audio mode using Cubase.&lt;br&gt;Students continue their work in Cubase.</td>
</tr>
<tr>
<td>Lesson</td>
<td>Date</td>
<td>Description of lesson</td>
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<td>--------</td>
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<td>--------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 13     | 15 August 2012 | Sharing successful processes and continuing individual work  
Students are asked to share things that have worked well for them when creating PMP. This could include how they have made meaning across the modes. |
| 14     | 17 August 2012 | Individual work on PMP  
Students continue their work in Cubase, or visual/linguistic software  
Students continue their work in Cubase. |
| 15     | 21 August 2012 | Individual work on PMP  
Students continue their work in Cubase, or visual/linguistic software |
| 16, 17 | 24 August 2012 (2 lessons) | Using sound effects and individual work on PMP  
Demonstration of how to import and modify sound effect files in Cubase.  
Students continue their work in Cubase, or visual/linguistic software |
| 18     | 27 August 2012 | Meaning-making within the PMP, and individual work on PMP  
Discussion about how students have made meaning in their projects.  
Students continue their work in Cubase. |
| 19     | 4 September 2012 | Reflecting on interactions with teacher, and individual work on PMP  
Discussion about how students have made meaning in their projects.  
Students continue their work in Cubase. |
| 20, 21 | 7 September 2012 (2 lessons) | Individual work on PMP  
Students continue their work in Cubase, or visual/linguistic software |
| 22     | 10 September 2012 | Reflecting on the use of linguistics, and individual work on PMP  
Students describe the use of linguistics in their PMP in their portfolios.  
Students continue their work in Cubase. |
| 23     | 12 September 2012 | Reflecting on the way the visual, linguistic and audio modes combine and impact on one another, and individual work on PMP.  
Students reflect on the interaction of the modes individually.  
Students continue their work in Cubase. |
| 24     | 14 September 2012 | Reflecting on the PMP, and individual work on PMP  
Students complete a reflection sheet about their PMP, their process, the interaction of the modes, working on the PMP inside and outside school, their identity within the PMP, preferred teaching strategies, differences between the MEMTU and normal work, and interactions with others.  
Students continue their work in Cubase. |
| 25     | 18 September 2012 | Compiling final PMP, and individual work on PMP  
Demonstration of mixing audio and compiling final video files. |
| 26, 27 | 21 September 2012 (2 lessons) | Final lessons  
Projects completed and handed in to teacher. (Composition portfolio, completed personal multimodal presentation, staged versions of personal multimodal presentation). |
## Appendix C – Profile survey of students’ music-technology

### Questionnaire

<table>
<thead>
<tr>
<th>Name</th>
<th></th>
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<tbody>
<tr>
<td>Nominated alias for report</td>
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</tr>
<tr>
<td>Musical instrument/s played</td>
<td></td>
</tr>
<tr>
<td>At what age did you start each instrument?</td>
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<tr>
<td>Do you still play each instrument?</td>
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<tr>
<td>How much practice do you complete each day/week per instrument?</td>
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<tr>
<td>Describe your skills on the piano/keyboard.</td>
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<tr>
<td>Does your family play and listen to music with you?</td>
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<tr>
<td>Give details.</td>
<td></td>
</tr>
<tr>
<td>Describe the musical performance areas are you involved with at school and outside of school</td>
<td></td>
</tr>
<tr>
<td>Describe your experience with musical composition at school and outside of school</td>
<td></td>
</tr>
<tr>
<td>What motivates you to study music?</td>
<td></td>
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<tr>
<td>Describe how you have used technology in music</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Describe how you have used technology to create multimodal presentations in the past</td>
<td></td>
</tr>
<tr>
<td>What types of multimodal texts do you watch? (e.g. films, TV shows, cartoons, advertisements, Internet clips)</td>
<td></td>
</tr>
<tr>
<td>How many hours would you spend each day working with multimodal texts?</td>
<td></td>
</tr>
<tr>
<td>How do you read and create multimodal texts in other subject areas at school?</td>
<td></td>
</tr>
<tr>
<td>Have you used any Music Sequencing Software before? (eg Cubase, Logic, Cakewalk, Acid Music, Garage Band) Give details.</td>
<td></td>
</tr>
<tr>
<td>Describe any experiences in combining the audio mode with the visual and linguistic mode (e.g. composing a film soundtrack, adding music to a photo slideshow).</td>
<td></td>
</tr>
</tbody>
</table>
Appendix D: Handout of PMP task given to students

YEAR 10 MUSIC ELECTIVE TERM 3 PROJECT (Due end of Term 3)

The personal multimodal presentation

Within a Year 10 Music elective class, students will be asked to gather personal images and video that represent important places in their lives that they will use in the creation of a personal multimodal presentation. Important places in one’s life can be physical, emotional or abstract but in this context will adhere to guidelines that will make these places de-identifiable.

Students will create the visual mode by selecting images and video that give an insight into the important places in their life worlds and allows them to draw upon their ‘funds of knowledge’. The visual mode of the students’ films will not contain any recognisable faces. The linguistic mode may be created at this point using Xtranormal or at a later stage using Cubase. The expectations of the visual and linguistic modes of the students’ personal multimodal presentations are that:

- It is of three to four minutes in duration,
- It includes a minimum of four distinct visual scenes (e.g. a sunrise, thunderstorm, a flock of birds in flight, a shark in the ocean)
- Use up to 150 written words throughout the movie as titles, labels or descriptions
- Use up to 60 seconds of dialogue (speech from characters in Xtranormal, or a voice over recorded in Cubase later in the project)
- Use images and video that are royalty free

The expectations for the audio mode of their personal multimodal presentation are that:

- It includes a minimum of four distinct musical textures
- It includes a minimum of three musical genres
- It may include up to 60 seconds of speech or dialogue (this may have been created prior to the commencement of the audio mode part of the task)
- It may include up to two 30 second samples of royalty free music recorded by someone else (including loops – short pre-recorded music samples)
- It may include any royalty free sound effects that students deem appropriate for their presentation
- It includes self-recorded audio
- It includes self-recorded midi (midi is a communication protocol that allows for the sending and receiving of data such as musical notes, volumes and lengths, between devices such as keyboards and computers).

In developing the audio mode the students will make use of the music technology software Cubase, which is an audio and midi sequencing program that allows them to create and manipulate many layers of sound to accompany their visuals and linguistics. Students can record many different types of audio (speech, instruments, etc.) using a microphone and midi tracks (using a keyboard to generate different instrument sounds). They can edit, combine, apply sound effects (reverse, time stretch, alter pitch) and move into alignment with visuals to create a soundtrack for their visual and linguistic modes.

Reflection (throughout the unit of work)
Throughout the creation process students will be asked to reflect on their efforts and relate their developing creations to their developing knowledge and experiences. Students will keep a record of any developing knowledge in their hard copy composition portfolio (a diary in which students reflect upon the decisions that they have made throughout the composition process). They will save staged versions of their personal multimodal presentations so that the process can be effectively tracked. Students will engage in discussion with me, their teacher, and with their peers in evaluating their creative process and to gain ideas from others. In guiding the reflective process I will use the following prompts with students:
- What are you trying to tell the viewer through the visual mode, the linguistic mode and the audio mode?
- In what ways does your use of the audio mode interplay with the message of your visual and linguistic modes? (e.g. enhance, contradict)
- How have your experiences from your life world influenced your creation of the audio, visual and linguistic mode?
Students will be encouraged to discuss their work with others in the classroom and question their peers about the meaning-making that is occurring in their personal multimodal presentations.

At the end of the project, each student in the class will have developed a personal multimodal presentation in the form of a **three to four minute film** and a **composition portfolio** detailing all of their reflections in relation to their meaning-making using the audio mode in a multimodal text.
## Appendix E: Sample from teacher reflective journal

<table>
<thead>
<tr>
<th>Date and lesson number</th>
<th>Description of class events and pedagogical moves</th>
<th>Reflection upon student progress, pedagogy and the seven pedagogical affordances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday 22 June 2012</td>
<td>...We then watched a Mickey Mouse Band Cartoon without the sound and the students were getting bored with just the visuals as they needed more stimulus. They were then asked to create their own soundtrack to the cartoon as a class group. The students were a little confused at first, but a leader emerged quickly (Bindy) who organized the students to represent particular characters from the cartoon and the instruments they were playing. Each group then spent some time working out what to play for each character. They then performed their representation of the soundtrack. It was awful!!! It was a cluster of unorganized sound where many students just wanted their parts to be heard just because they were playing the correct instruments rather than being concerned with the content of the music that they are playing. The students had not discussed how the different ideas could link together - I will discuss this with them in the next lesson- as this is an important step in making their soundtrack work. It was quite clear that the group had difficulty in organising their ideas.</td>
<td></td>
</tr>
<tr>
<td>Lesson 2 &amp; 3</td>
<td>The affordance of active knowledge making allowed the students to experience first-hand how to create audio for the visual mode. It was a challenging task to complete as a group, but it gave them plenty of opportunity to engage with multimodal meaning as they created their soundtrack. It also brought to the fore the importance of organisational structure when attempting to create audio to accompany a visual. The students demonstrated collaborative intelligence as they shared their ideas about how the characters and their movements could be conveyed by audio. It was a great task for differentiated learning as all students were able to contribute some audio to the soundtrack, whether it be a rapid scale-like passage or a slow-paced progression of chords. Students drew upon their own multimodal experiences of similar scenes and tried to bring the audio ideas to this context. It was quite a mess,</td>
<td></td>
</tr>
</tbody>
</table>
into something that would work musically and that whilst they may recognise some of the subtleties of the audio mode and how it can enhance the visual and linguistic mode, it is difficult for them to recreate this in practice. I wonder how their skills will improve as the unit of work progresses and they gain more experience in analysing the audio mode in multimodal projects...

but it did offer them a safe and non-threatening environment to experiment with their classmates. It was also fun to watch, as the students were clearly enjoying their task.
Appendix F: Lesson plan and data collection methods

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Date</th>
<th>Description of lesson</th>
<th>Data collection methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>19 June 2012</td>
<td>Introducing the PMP. Introduction of my PMP. Discussion of visual, linguistic and audio modes. Hand out project parameters and set image collection task for presentation. Hand out music/technology profiles.</td>
<td>Videoing of student screens</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Profile survey of students’ music-technology</td>
</tr>
<tr>
<td>2, 3</td>
<td>22 June 2012</td>
<td>Analysing and creating in multimodal contexts Watch cartoons (Popeye, Donald Duck camping, Pluto and the Stork) and discuss the use of the audio mode in augmenting the visual and linguistic modes. Watch Mickey Mouse band cartoon (without the sound) and create the audio soundtrack for the cartoon in groups.</td>
<td>Audio recording of lesson snippets</td>
</tr>
<tr>
<td></td>
<td>(2 lessons)</td>
<td></td>
<td>Audio recording of learning conversations</td>
</tr>
<tr>
<td>4</td>
<td>18 July 2012</td>
<td>Revisiting task parameters and complimenting modes Write in portfolios about ideas. Watch the scene from Jaws without the sound and identify the meanings conveyed by the visuals prior to Jaws appearing.</td>
<td>Collection of student artefact – staged PMP on Cubase</td>
</tr>
<tr>
<td>5</td>
<td>20 July 2012</td>
<td>Technology for creating visual and linguistic Demonstrate use of software for creating visual and linguistic presentation. Discuss and create audio mode accompaniments to different scenes as suggested by teacher and students.</td>
<td>Collection of student artefact – keeping a teacher reflective journal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Collection of student artefact – portfolios</td>
</tr>
<tr>
<td>6, 7</td>
<td>27 July 2012</td>
<td>Completing the visual and linguistic, and technology for the audio mode Students complete the visual and linguistic mode of their multimodal presentation.</td>
<td>Keeping a teacher reflective journal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Collection of student artefact – keeping a teacher reflective journal</td>
</tr>
<tr>
<td>Lesson</td>
<td>Date</td>
<td>Description of lesson</td>
<td>Data collection methods</td>
</tr>
<tr>
<td>--------</td>
<td>-----------</td>
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<td>--------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>(2 lessons)</td>
<td>Demonstration of Cubase software for creating the audio mode in the PMP.</td>
<td>Profile survey of students' music-technology</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Videoing of student screens</td>
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<td>Audio recording of learning conversations</td>
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<td>Collection of student artefact – staged PMP on Cubase</td>
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<td>Collection of student artefact – PMP on Cubase</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Keeping a teacher reflective journal</td>
</tr>
<tr>
<td>8</td>
<td>1 August 2012</td>
<td>Individual work on PMP - Discussion about the important aspects of the creation of the audio mode. Students commence their work in Cubase. Watch several television advertisements and analyse the relationship between the audio, visual and linguistic modes (did not do this part due to missed lessons).</td>
<td>✔ ✔ ✔ ✔ ✔</td>
</tr>
<tr>
<td>9</td>
<td>3 August 2012</td>
<td>Explaining student PMP and continuing individual work - Students outline their story, compose a timeline/storyboard of their PMP, and describe how the story represents an important place and has personal meaning to them.</td>
<td>✔ ✔ ✔ ✔ ✔</td>
</tr>
<tr>
<td>10</td>
<td>7 August 2012</td>
<td>Individual work on PMP - Students continue their work in Cubase, or visual/linguistic software</td>
<td>✔ ✔ ✔ ✔ ✔</td>
</tr>
<tr>
<td>11, 12</td>
<td>10 August 2012 (2 lessons)</td>
<td>Using Cubase in more detail - Discussion about the creation of the audio mode using Cubase. Students continue their work in Cubase.</td>
<td>✔ ✔ ✔ ✔ ✔</td>
</tr>
<tr>
<td>13</td>
<td>15 August 2012</td>
<td>Sharing successful processes and continuing individual work - Students are asked to share things that have worked well for them when creating PMP. This could include how they have made meaning across the modes.</td>
<td>✔ ✔ ✔ ✔</td>
</tr>
<tr>
<td>14</td>
<td>17 August 2012</td>
<td>Individual work on PMP</td>
<td>✔ ✔ ✔ ✔ ✔</td>
</tr>
<tr>
<td>Lesson</td>
<td>Date</td>
<td>Description of lesson</td>
<td>Data collection methods</td>
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<td>---------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------</td>
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<tr>
<td></td>
<td>15 21st August</td>
<td>Students continue their work in Cubase, or visual/linguistic software</td>
<td>Videoing of student screens</td>
</tr>
<tr>
<td></td>
<td>16, 17 August</td>
<td>Using sound effects and individual work on PMP Demonstration of how to import and modify sound effect files in Cubase.</td>
<td>Audio recording of lesson snippets</td>
</tr>
<tr>
<td></td>
<td>18 27th August</td>
<td>Meaning making within the PMP, and individual work on PMP Discussion about how students have made meaning in their projects.</td>
<td>Keeping a teacher reflective journal</td>
</tr>
<tr>
<td></td>
<td>19 4th September</td>
<td>Reflecting on interactions with teacher, and individual work on PMP Discussion about how students have made meaning in their projects.</td>
<td>Collection of student artefact – staged PMP on Cubase</td>
</tr>
<tr>
<td></td>
<td>20, 21st September</td>
<td>Individual work on PMP Students continue their work in Cubase, or visual/linguistic software</td>
<td>Collection of student artefact – PMP on Cubase and 符号</td>
</tr>
<tr>
<td></td>
<td>22 10th September</td>
<td>Reflecting on the use of linguistics, and individual work on PMP Students describe the use of linguistics in their PMP in their portfolios.</td>
<td>Collection of student artefact – PMP on Cubase and 符号</td>
</tr>
<tr>
<td></td>
<td>23 12th September</td>
<td>Reflecting on the way the visual, linguistic and audio modes combine and impact on one another, and individual work on PMP.</td>
<td>Collection of student artefact – 符号 and 符号</td>
</tr>
<tr>
<td>Lesson</td>
<td>Date</td>
<td>Description of lesson</td>
<td>Data collection methods</td>
</tr>
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</tr>
<tr>
<td>24</td>
<td>14 Sept 2012</td>
<td>Students reflect on the interaction of the modes individually. Students continue their work in Cubase.</td>
<td>Profile survey of students' music technology Vlogging of student screens Audio recording of lesson snippets Audio recording of learning conversations Collection of student artefact - staged PMP on Cubase Collection of student artefact - PMP</td>
</tr>
<tr>
<td>25</td>
<td>18 Sept 2012</td>
<td>Reflecting on the PMP, and individual work on PMP Students complete a reflection sheet about their PMP, their process, the interaction of the modes, working on the PMP inside and outside school, their identity within the PMP, preferred teaching strategies, differences between The MEMTU and normal work, and interactions with others. Students continue their work in Cubase.</td>
<td>Vlogging of student screens Audio recording of learning conversations Collection of student artefact - PMP</td>
</tr>
<tr>
<td>26, 27</td>
<td>21 Sept 2012 (2 lessons)</td>
<td>Compiling final PMP, and individual work on PMP Demonstration of mixing audio and compiling final video files.</td>
<td>Vlogging of student screens Audio recording of learning conversations Collection of student artefact - PMP</td>
</tr>
</tbody>
</table>

**Introduction of my personal multimodal presentation (one lesson)**

In the first lesson as teacher-researcher I introduced the unit of work by sharing my PMP with the students with the purpose of inspiring them to be creative and explore a wide range of important places in their lives. This was a useful way to remove the barrier between teacher and student by offering an insight into my personal life world.
My PMP acted as a model for students giving examples of the types of images and videos that they may use when constructing the visual and linguistic modes of their presentations. The class then participated in an analytical discussion of how the audio mode was used in relation to the linguistic and visual modes in my PMP, making specific use of musical terminology. My composition portfolio was presented to the class and a few snapshots of moments of reflection were shared. We then unpacked the requirements of the PMP and students were set the task of gathering visuals for their narratives. Students were specifically asked to use royalty free images and audio throughout their PMP.

Watch excerpts for analysis purposes (three lessons)

Students discussed how the audio mode augmented the visual and linguistic modes in excerpts from cartoons and movies. I led the discussions and encouraged the students to refer to musical terminology when describing the audio mode and to recall other examples where they may have experienced similar interactions between the audio, and visual and linguistic modes. Students were encouraged to create the audio mode for a Mickey Mouse cartoon in groups before attempting to describe and perform the audio mode for short scenes as suggested firstly by the teacher and then the students. Students watched the scene from the movie Jaws, before the shark attack (this was a beach scene with little or no reference to a shark attack), without the audio and described the meanings conveyed by the visuals. They then watched the scene with the audio and comment on the differences in meaning. These lessons used a collaborative approach to augment student analysis skills, using multimodal examples to inspire student thinking in the purpose and function of the audio in multimodal texts.
Demonstration of visual/linguistic software (one lesson)

I demonstrated the software packages Windows Movie Maker, Pinnacle and PowerPoint, and web-based video creator Xtranormal in the Music technology laboratory. The students had some experience in working with the software listed above but this lesson ensured that each student had the necessary fundamental tools to create the visual and linguistic modes of their PMP.

Individual work on visual and linguistic modes (three lessons)

Students created the visual mode by selecting images and video that gave an insight into the important places, allowing them to draw upon their personal interests. The visual mode of the students’ films would not include any recognisable faces. Students had the option of creating the linguistic mode at this point using Xtranormal or at a later stage using Cubase.

Demonstration of Cubase software (initially ½ lesson, then in fragments as questions arose)

I demonstrated the basic features of Cubase for creating audio to accompany the visual and linguistic modes. Most students had some experience with Cubase in the mandatory Year 8 Music course at the school. Students were given the opportunity to experiment with Cubase, import their video, and become familiar with the tools that they would be working with.
**Individual work on the audio mode (18 lessons)**

Students had 18 lessons in which to complete the audio mode of their PMPs. At the beginning of each of these lessons I led a short discussion about how students had created audio; used sound effects; made meaning; recorded real sounds; and used musical terminology throughout the process. These discussions promoted the value of reflection and encouraged students to thoughtfully document their process in their composition portfolios.

In developing the audio mode, the students made use of the music technology software Cubase, which is a cross-platform audio and midi sequencing program that allowed them to create and manipulate many layers of sound to accompany their visuals and linguistics. Students could record many different types of audio (speech, instruments, etc.) using a microphone and midi tracks (using a keyboard to generate different instrument sounds). They could edit, combine, apply sound effects (reverse, time stretch, alter pitch) and move their audio into alignment with visuals to create a soundtrack for their visual and linguistic modes.

**Reflection (throughout the unit of work)**

Throughout the creation process students were asked to reflect on their efforts and relate their emerging creations to their developing knowledge and experiences. Students kept a record of any developing knowledge in their hard copy composition portfolio (a diary in which students reflected upon the decisions that they made throughout the composition process). The students saved staged versions of their PMPs so that the process could be effectively tracked. Students engaged in discussion with me, their teacher, and with their peers in evaluating their creative process and to
gain ideas from others. In guiding the reflective process, I used the following prompts with students:

- What are you trying to tell the viewer through the visual mode, the linguistic mode and the audio mode?
- In what ways does your use of the audio mode interplay with the message of your visual and linguistic modes? (e.g. enhance, contradict)
- How have your experiences from your life world influenced your creation of the audio, visual and linguistic mode?

Students were encouraged to discuss their work with others in the classroom and question their peers about the meaning-making that occurred in their PMP.

At the end of the project, each student in the class developed a PMP in the form of a three to four-minute film and a composition portfolio detailing all of their reflections in relation to their meaning-making using the audio mode in a multimodal text.
## Appendix G: Display of lessons and seven pedagogical affordances

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Date</th>
<th>Phase</th>
<th>Description of lesson</th>
<th>Seven Pedagogical Affordances</th>
</tr>
</thead>
</table>
| 1      | 19 June 2012 | 1     | *Introducing the PMP*  
Introduction of my personalised multimodal presentation. Discussion of visual, linguistic and audio modes. Hand out project parameters and set image collection task for presentation. Hand out music/technology profiles | ![ ]( ) |
| 2, 3   | 22 June 2012 (2 lessons) | 1     | *Analysing and creating in multimodal contexts*  
Watch six cartoons (Popeye, Donald Duck camping, Pluto and the Stork) and discuss the use of the audio mode in augmenting the visual and linguistic modes.  
Watch Mickey Mouse band cartoon (without the sound) and create the audio soundtrack for the cartoon in groups. | ![ ]( ) ![ ]( ) ![ ]( ) ![ ]( ) ![ ]( ) |
| 4      | 18 July 2012 | 1     | *Revisiting task parameters and modes*  
Write in portfolios about ideas.  
Watch the scene from Jaws without the sound and identify the meanings conveyed by the visuals prior to Jaws appearing. | ![ ]( ) ![ ]( ) ![ ]( ) ![ ]( ) ![ ]( ) |
| 5      | 20 July 2012 | 1     | *Technology for creating visual and linguistic*  
Demonstrate use of software for creating visual and linguistic presentation.  
Discuss and create audio mode accompaniments to different scenes as suggested by teacher and students. | ![ ]( ) ![ ]( ) ![ ]( ) ![ ]( ) ![ ]( ) |
<table>
<thead>
<tr>
<th>Lesson</th>
<th>Date</th>
<th>Phase</th>
<th>Description of lesson</th>
<th>Seven Pedagogical Affordances</th>
</tr>
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<tbody>
<tr>
<td>6, 7</td>
<td>27 July 2012 (2 lessons)</td>
<td>2</td>
<td><strong>Completing the visual and linguistic, and technology for the audio mode</strong>&lt;br&gt;Students complete the visual and linguistic mode of their multimodal presentation. Demonstration of Cubase software for creating the audio mode in the personal multimodal presentation.</td>
<td>✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>8</td>
<td>1 August 2012</td>
<td>2</td>
<td><strong>Individual work on PMP</strong>&lt;br&gt;Discussion about the important aspects of the creation of the audio mode. Students commence their work in Cubase. Watch several television advertisements and analyse the relationship between the audio, visual and linguistic modes (did not do this part due to missed lessons).</td>
<td>✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>9</td>
<td>3 August 2012</td>
<td>2</td>
<td><strong>Explaining student PMP and continuing individual work</strong>&lt;br&gt;Students outline their story, compose a timeline/storyboard of their PMP, and describe how the story represents an important place and has personal meaning to them.</td>
<td>✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>10</td>
<td>7 August 2012</td>
<td>2</td>
<td><strong>Individual work on PMP</strong>&lt;br&gt;Students continue their work in Cubase, or visual/linguistic software</td>
<td>✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>1, 2</td>
<td>10 August 2012</td>
<td>1</td>
<td><strong>Using Cubase in more detail</strong>&lt;br&gt;Discussion about the creation of the audio mode using Cubase. Students continue their work in Cubase.</td>
<td>✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Lesson</td>
<td>Date</td>
<td>Phase</td>
<td>Description of lesson</td>
<td>Seven Pedagogical Affordances</td>
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<td></td>
<td>Ubiquitous learning</td>
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<td></td>
<td>Active knowledge making</td>
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<td>Recursive feedback</td>
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<td>Collaborative intelligence</td>
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<td>Differentiated learning</td>
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<tr>
<td>(2 lessons)</td>
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<td>1 3</td>
<td>15 August 2012</td>
<td>2</td>
<td><em>Sharing successful processes and continuing individual work</em> Students are asked to share things that have worked well for them when creating PMP. This could include how they have made meaning across the modes.</td>
<td>✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>1 4</td>
<td>17 August 2012</td>
<td>2</td>
<td><em>Individual work on PMP</em> Students continue their work in Cubase, or visual/linguistic software</td>
<td>✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>1 5</td>
<td>21 August</td>
<td>2</td>
<td><em>Individual work on PMP</em> Students continue their work in Cubase, or visual/linguistic software</td>
<td>✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>1 6, 1 7</td>
<td>24 August 2012 (2 lessons)</td>
<td>1 2 1 2</td>
<td><em>Using sound effects and individual work on PMP</em> Demonstration of how to import and modify sound effect files in Cubase. Students continue their work in Cubase, or visual/linguistic software</td>
<td>✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>1 8</td>
<td>27 August 2012</td>
<td>2</td>
<td><em>Meaning-making within the PMP, and individual work on PMP</em> Discussion about how students have made meaning in their projects. Students continue their work in Cubase.</td>
<td>✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>1 9</td>
<td>4 September</td>
<td>2</td>
<td><em>Reflecting on interactions with teacher, and individual work on PMP</em></td>
<td>✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Lesson</td>
<td>Date</td>
<td>Phase</td>
<td>Description of lesson</td>
<td>Seven Pedagogical Affordances</td>
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<td>Ubiquitous learning</td>
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<td>✓</td>
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<td>✓</td>
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<tr>
<td>Lesson</td>
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<td></td>
<td>the MEMTU and normal work, and interactions with others. Students continue their work in Cubase.</td>
<td>Ubiquitous learning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Compiling final PMP, and individual work on PMP</strong> Demonstration of mixing audio and compiling final video files.</td>
<td>✔</td>
</tr>
<tr>
<td>2</td>
<td>5 18 September 2012</td>
<td>2</td>
<td><strong>Final lessons</strong> Projects completed and handed in to teacher. (Composition portfolio, completed personal multimodal presentation, staged versions of personal multimodal presentation).</td>
<td>✔</td>
</tr>
</tbody>
</table>
Appendix H: Display of selected students’ relevant transcripts and multimodality (audio, visual, linguistic) with sample text

<table>
<thead>
<tr>
<th>Student</th>
<th>Excerpts from transcripts and portfolios</th>
<th>Comments on aspects of multimodality evident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galaxy Girl</td>
<td>After experimenting with pretty much every instrument on Cubase, Mr V asked me what kinds of music I hoped to produce with this film. The details on how I do it are still vague; however, I want to begin the film with something dramatic and loud, hopefully orchestra. From section to section (galaxy -&gt; Solar System -&gt; Earth -&gt; Australia -&gt; Galaxy again) the music will change notably (somehow). This is how far I got today (PGG20120801).</td>
<td>This relatively early reflection by Galaxy Girl identifies the structure of her PMP and gives some detail as to how the audio mode will change to complement the visual mode. The use of audio metalanguage is at quite a basic level at this early stage of the task (dramatic, loud, orchestra), but it shows that she is giving the audio mode some consideration even in the early stages.</td>
</tr>
</tbody>
</table>
| Cinderella | Mr V:  *Great, okay, so you’ve got dum, dahdum, dahdum, dum, dahdahdum. Why did you choose such a syncopated dance type rhythm?*  

Cinderella: I don’t know, the characters face is kind of... weird.  

*Mr V:  The characters face is weird, in what way?*  

Cinderella: Yeah, it’s kind of... I don’t know, Spanishy kind of... | This learning conversation moves from discussing the audio mode, to justifying its inclusion based on the visual mode. The assumption can be made that Cinderella considers the syncopated dance rhythm to be of a Spanish style (TRJ20120815) |
| Mr V: Spanishy? (CC 20120815) | Brigitta | Mr V: So, what have you done for the sunset bits?  
Brigitta: I did... so here I did... so the melody was in the flute and so for this bit you have those... there’s the bubbles, I thought they were kind of going that way so I did a little run up here in the melody so I’ve done a second section and then...  
Mr V: ...ascending.  
Brigitta: This bit I’ve got descending, like staccato and then there’s the clarinet as well because I did them here and then I did them lower down and so the clarinet, is better. And then it climaxes here cause that’s where the sunset is deepest so I need to build over that. And then for all these bits where it’s sunset and you see the water I’ve got cello down here for just an accompaniment but like chords type stuff. And then here I’ve got... it’s just a simple piano line but I’m not sure whether that’s a melody or whether I’ll put something on top of it (CB20120824).  
This learning conversation really captures the power of the visual mode for inspiring the creation of audio. Brigitta was able to parallel the visual images with musical ideas that complemented their meaning just like our scaffolded examples in Phase One. This is a good example of multimodal interplay between the visual and audio modes (TRJ20120824). |

Note: excerpts are highlighted per focus mode (audio = blue, visual = magenta, linguistic = green)
## Appendix I: Display of selected students’ relevant transcripts and the seven pedagogical affordances with sample text

<table>
<thead>
<tr>
<th>Student</th>
<th>Excerpts from transcripts and portfolios</th>
<th>Comments on aspects of the seven pedagogical affordances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galaxy Girl</td>
<td>Mr V: Let’s have a listen and hear what it sounds like with the voices [WE LISTEN]...</td>
<td>This example of collaborative intelligence captures the way in which I reassured Galaxy Girl that her work was going well and at the same time made some suggestions as to what she could experiment with to create her desired meaning (epic). It is a good example because it shows how the majority of the seven pedagogical affordances can be enacted together (recursive feedback, multimodal meaning, differentiated learning and active knowledge making).</td>
</tr>
<tr>
<td></td>
<td>Galaxy Girl: It sounds a bit weird.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mr V: It sounds great.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Galaxy Girl: It’s just...</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mr V: What I would be thinking of now is how you could thicken those ideas up, I think it’s very clear that you’ve got a nice chord progression in there, what is it? A minor to F or something like that?</td>
<td></td>
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<tr>
<td></td>
<td>Galaxy Girl: Something.</td>
<td></td>
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<tr>
<td></td>
<td>Mr V: [Plays a bass ostinato]. What about something like this underneath, maybe not with this synth sound, but underneath you could have like a driving orchestral sounding thing. So, you’ve got options to add to that.</td>
<td></td>
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<tr>
<td></td>
<td>Galaxy Girl: Yep.</td>
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<tr>
<td></td>
<td>Mr V: So, you seem to have that repetition happening in the piano and the nice melody with the long-sustained chords. So, you’ve basically got</td>
<td></td>
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</tbody>
</table>
everything. You just need to orchestrate it, to make it sound epic.

Galaxy Girl: Yep.

Mr V: (Demonstrates some strings). Plus, you’ve got some low sounding percussion you could add as well (CGG20120824).

Cinderella

Mr V: So, is it in a major or minor key?

Cinderella: Well, it kind of starts major and then drifts into minor?

Mr V: So, they kind of morph from major to minor?

Cinderella: Yeah, it goes into minor

Mr V: So, how many notes are in this motif?

Cinderella: Not many, two.

Mr V: Okay, it’s fairly short, is it?

Cinderella: Well, it’s like long notes (sings) then all the other instruments come in. And then have different things that play underneath.

Mr V: Like countermelodies and things that spiral?

Cinderella: Yeah.

Mr V: Ascending, are they?

Cinderella: Yeah, and then there’s the one that goes (sings).

This learning conversation is an example of recursive feedback at the point of need. Cinderella was having difficulty using audio metalanguage to describe her musical ideas, so my questioning focused on helping her to break down the elements to describe them. The terms we described were not new terms, she just was not practiced in using them. This differentiated learning was an important part of building students’ confidence in the lessons, so they could describe the elements of their music (TRJ20120824).
Mr V: Okay, so it goes up?

Cinderella: Yeah.

Mr V: So, it just gradually builds up and the layers get thicker and thicker. Okay, great (CC20120824).

<table>
<thead>
<tr>
<th>Brigitta</th>
<th>Mr V: And your fireworks?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brigitta: And so, for fireworks at the moment I’ve got a violin, and this is a viola and cello but I’m just kind of working...</td>
<td>Mr V: ...experimenting?</td>
</tr>
<tr>
<td>Brigitta: Experimenting, because I wasn’t sure whether to use the full strings one, or whether to do individual voices. And that’s all I’ve got.</td>
<td>Mr V: You could do a bit of both.</td>
</tr>
<tr>
<td>Mr V: You could do a bit of both.</td>
<td>Brigitta: Yeah.</td>
</tr>
<tr>
<td>Mr V: Can I have a listen?</td>
<td>Mr V: Can I have a listen?</td>
</tr>
<tr>
<td>...[WE LISTEN]...</td>
<td>...[WE LISTEN]...</td>
</tr>
<tr>
<td>Mr V: I like how your strings come in... the upper strings when you’ve got your fireworks. It’s almost at a new tempo, isn’t it?</td>
<td>Mr V: I like how your strings come in... the upper strings when you’ve got your fireworks. It’s almost at a new tempo, isn’t it?</td>
</tr>
<tr>
<td>Mr V: Almost as if you’re doing double tempo, could be, or you could just</td>
<td>Mr V: Almost as if you’re doing double tempo, could be, or you could just</td>
</tr>
</tbody>
</table>

This learning conversation demonstrates recursive feedback and collaborative intelligence as Brigitta explains what she has managed to create for her fireworks scene, and I offer some advice as to how she can further progress her ideas. Importantly, I listen to Brigitta’s work and this allows me really engage with her ideas and suggest appropriate compositional techniques for her to experiment with. This work is highly individualised and relevant to her PMP (TRJ20120824).
increase the tempo right on that spot, from that bar if you wanted to. I really like that. I like your opening part. And I’m thinking we can make it more interesting by changing the texture as the pictures change maybe or you know a new picture comes in... like if you start with the texture you have maybe you can add some different layers in at times. I was thinking it was strings and then when the strings came in, the cello came in, it was very nice. And I’m thinking, should we be thinking about splitting some of that up? So, you have some higher and lower pitched things as well (CB20120824).