THE DEVELOPMENT OF ORACY IN STUDENTS WITH ENGLISH AS AN ADDITIONAL LANGUAGE OR DIALECT THROUGH MUSIC

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DECLARATION OF ORIGINALITY

This work has not been submitted previously for a degree of diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

Signed …………………………………………….. Date 16th June, 2017
ABSTRACT

This research investigates the potential of a music intervention to develop musicality and oracy in primary school aged students with English is an additional language or dialect (EAL/D). The research inquired: 1) what is the effect of a music intervention on the musicality of students with EAL/D; and 2) what is the effect of a music intervention on the level of oracy (verbal fluency, prosody and pronunciation) of students with EAL/D.

Music and speech are both auditory forms of communication, and neuroscientific research indicates that there are common processing mechanisms between them (Moreno, 2009; Patel, 2008). As a result, past research has continued to draw upon music and music pedagogy to explore its ability to develop other cognitive domains. The prevalence of music and its similarities to particular oracy skills further encouraged the use of music to investigate its potential to develop the verbal fluency, prosody, and pronunciation for students with EAL/D.

Australia’s immigration rates have continued to increase, in which 20% to 25% of school students have English as an additional language or dialect (Commonwealth of Australia, 2016a; Hammond, 2014). The Australian Curriculum, Assessment and Reporting Authority ([ACARA], 2014b) notes that students with EAL/D are seen to struggle with aspects of oracy, and are expected to meaningfully communicate in spoken English for a variety of social and academic purposes. Although Australian teachers have access to a variety of curriculum documents, these documents do not outline specific strategies for teachers of students with EAL/D to assist in the development of their verbal fluency, prosody and pronunciation. Therefore, this research attempted to do so through the implementation of an eight-week music
intervention that drew upon the principles of audiation from Gordon’s Music Learning Theory (The Gordon Institute for Music Learning [GIML], 2017a). The principles of audiation from Gordon’s Music Learning theory were used in this intervention due to the focus on pitch and rhythm. This focus would allow students to develop tonal and rhythmic vocabularies, and thus assist in their ability to audiate, or to hear sounds in their heads.

The implementation of this music intervention reflected the pragmatic nature of this research as it aimed to investigate music’s potential to develop three specific oracy skills for students with EAL/D: verbal fluency, prosody, and pronunciation. A single-subject experimental design (SSED) methodology was employed as it allowed the individual reporting of student participant results. Results from qualitative and quantitative data indicated that all students demonstrated improvements in their level of musicality after their participation in the music intervention to varying degrees. All participants were noted as having increased levels of pronunciation, but only five of the six participants improved their level of prosody post-intervention. No significant improvements could be reported for students’ verbal fluency. Results indicated there is the potential for this music intervention to develop prosody and pronunciation for students with EAL/D. Although these positive results were obtained, further research is needed over an extended period of time to investigate the full extent of music’s influence on these skills and additional areas within other cognitive domains.

Additional results from semi-structured interviews and observations indicated all students demonstrated an increase in their confidence, motivation and engagement, and that the music intervention facilitated the development of relationships between peers and staff. Previous research found that music is an engaging tool that alleviates the anxiety associated with language learning (Ara, 2009;
Fonseca-Mora, Toscano-Fuentes, & Wermke, 2011). It can be suggested that potential correlations exist between confidence, motivation and engagement and the development of their prosody and pronunciation, as it encouraged students to take risks and experiment with their verbal communication in the English language, in turn influencing the facilitation of relationships. Further research into this area would be needed, however, to confirm or refute these suggested correlations.

Results from this research revealed there is potential for this music intervention to develop specific oracy skills for students with EAL/D, particularly prosody and pronunciation. This research may assist primary school teachers in developing specific strategies to target and develop verbal fluency, prosody, and pronunciation for students with EAL/D. Additionally, this research adds to the growing body of knowledge around the benefits of music developing skills in other cognitive domains.
ACKNOWLEDGMENTS

I have received a tremendous amount of support from a number of people and organisations over the last four years. I would like to express my sincere gratitude to these select people who have had a significant impact on my life and this research process, all of whom I could not have reached this point without.

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ninth year as a student at Griffith University, and over this time, I have enjoyed every minute of it. You have provided me with many opportunities as a researcher and teacher that are invaluable, and I have had the pleasure of interacting with and working alongside some of the most amazing staff who were always available for knowledge, support, guidance, and a good laugh. I am so fortunate to have studied here, and I cannot thank you enough for providing me with all the opportunities that you have.

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you have constantly been there in the background cheering me on as I reach for my dreams and supporting any decision I make. I love you all and cannot thank you enough.
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The following publications were submitted during the period of study for this thesis, some of which are referred to within the text.

**Peer Reviewed Journal Publication**


**Peer Reviewed Full Research Papers (Conference)**


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OVERVIEW OF RESEARCH STUDY

1.1 INTRODUCTION
Oracy is defined as one’s general ability in speaking and listening (ORACY Australian Association Inc., 2017). This thesis investigates the potential of a music intervention on the development of oracy, in particular verbal fluency, prosody and pronunciation, in a select sample of primary school aged students with English as an additional language or dialect (EAL/D) who are currently living in Australia. This chapter presents the origin, background and significance, and motivation for the research topic. It then outlines the research focus and accompanying research questions, before detailing the design and methodology employed to address the research questions. The chapter concludes with the presentation of limitations of this study and provides a summary of the chapters that follow.

1.2 ORIGIN OF THE RESEARCH
Music is my passion, my inspiration, and my motivation. My life has revolved around music, both the practice and theory components, for the past 22 years as a musician and the last nine as a music teacher. It continues to be a significant factor within my everyday life. Additionally, the extensive study of and immersion in Japanese language and culture, and my personal experiences with bilingualism also motivated
this research. My acquisition of the Japanese language largely through the medium of song motivated me to investigate the capacity that music has in contributing oracy of recently arrived immigrants from a non-English speaking background. Learning through the medium of song reinforced my acquisition of vocabulary and foundational concepts of oral language, including fluency and pronunciation, for Japanese words and phrases.

The results from prior research (McCormack & Klopper, 2016) indicated a potential relationship exists between the development of particular elements of oracy and music through the use of music as a pedagogical tool. A recommendation from that research called for further investigation into the use of a music intervention that is found in the principles of audiation (The Gordon Institute for Music Learning [GIML], 2017b) to facilitate the development of oracy in students with English as an additional language or dialect (EAL/D).

1.3 RATIONALE AND SIGNIFICANCE

Individuals who have a native language other than English and simultaneously study English and school curriculum content in English can be referred to in a variety of terms. Three of the most common terms within educational contexts globally are English as a Foreign Language (EFL), English as a Second Language (ESL), and English as an Additional Language or Dialect (EAL/D). Fundamental differences exist between the three terms and are explained in the literature review (Chapter 2). For the purpose of this research, the term used and participants involved are recognised and referred to as students with English as an Additional Language or Dialect (EAL/D). Additionally, when ‘English’ is referred to throughout this thesis, it is in reference to Standard Australian English as defined in the Australian Curriculum (Australian Curriculum, Assessment and Reporting Authority [ACARA], 2012).
1.3.1 Significance of music

Music can be considered all pervasive; effortlessly transcending global barriers and playing an important part in societies and cultures across the world (Garfias, 2004). It is a way of knowing, and the production and function of music are seen to vary around the world. It is both a product and reflection of identity and cultural context and practices (Ewing, 2011; Garfias, 2004). Brewer and Campbell (1991) claim “music has the unique quality of integrating emotional, cognitive and psychomotor elements” (p. 231). Music simultaneously relaxes and stimulates, whilst also educating and developing one’s listening skills and architecture of sound (Brewer & Campbell, 1991).

More specifically, music does not only influence a variety of elements in our daily lives, but our natural affinity to and relationship with music is said to start long before we are born and remains particularly prominent throughout a range of childhood experiences and interactions (Campbell, 2008). Zatorre (2005) revealed that as of six months’ foetal maturity, our brains have the ability to perceive music. This affinity to music remains prominent after birth, as the components that make up children’s daily lives across all cultures are infused with music and musical experiences – social interactions and relationships, behaviour, home routines, and even play (Fox, 2000). Fonseca-Mora et al. (2011) explain that children generally love and appreciate music and musical activities because they are fun and can help reduce anxiety. Despite the prevalence of music in our everyday lives, particularly children’s, it has not necessarily been a primary subject area in education systems until more recently.

In Australian primary school education (P-6), music is a subject that falls under the banner of the Arts learning area that includes drama, dance, visual arts, music and media arts (ACARA, 2013). Ewing (2011) outlines that the arts have not always been valued in education and have had the tendency to be regarded with suspicion. There
was an elitist status assigned to the Arts, and those who engaged in them were only the highly educated (Ewing, 2011; Garfias, 2004). Additionally, there has been the continued focus on literacy and numeracy as they were perceived to be the gateway to higher education, and a reflection of the quality of teaching and learning within schools (Ewing, 2011). The last two decades, however, have evidenced a shift in mindset towards the inclusion of the Arts in education and as an official part of the curriculum. Creativity, imagination, and cultural diversity are needs emphasised in 21st Century education (Ewing, 2011; United Nations Educational, Scientific and Cultural Organisation [UNESCO], 2006; Wynn, 2009), in which arts-based education, music in particular, can foster and develop. The Arts also possess the ability to not only be learned as individual subjects, but employed as a pedagogical tool by which students are able to learn social and behavioural competencies, and other curriculum content, skills and processes (Australia Council for the Arts, 2010; ACARA, 2013; Los Angeles County Board of Education, 2002; UNESCO, 2006). The development of other curriculum content through music has been a focus in education research (Costa-Giomi, 2004; Franklin et al., 2008; Schellenberg, 2006). In addition to the development of other curriculum learning areas, significant connections have more recently been identified between music and speech.

1.3.2 Connection between music and speech

Music and speech are regarded auditory forms of communication, and it is believed that everyone has an innate ability to perceive and understand music (Anderson & Lawrence, 2014; Campbell, 2008). Lowey (1995) explains that the music of speech is the earliest dimension of language that is used and understood by children, and consequently, should not be considered solely in a cognitive or linguistic context, but a musical one. More recently, research exploring the potential parallels between
speech and music has drawn upon methodologies and methods from the field of neuroscience to investigate the phenomenon (Bangert et al., 2006; Moreno, 2009; Stevens, Keller, & Tyler, 2013). Recent studies (Moreno, 2009) in the field of neuroscience have indicated that music influences brain structure and has positive transfer effects on other processes and cognitive domains. More specifically, empirical evidence suggests there are inter-hemispheric connections and interactions between mechanisms within the human brain that govern musical and linguistic processing (Bidelman, Gandour, & Krishnan, 2011; Koelsch et al., 2002; Maess, Koelsch, Gunter, & Friderici, 2001; Patel, 2008; Slevc, Rosenberg, & Patel, 2009). Inter-hemispheric connections are evident through the elements of pitch and rhythm, as they are prominent and required for both music and speech.

The musical elements of pitch (melody) and rhythm are generally expected to be terms used when defining music; however, they are equally as important in speech. Cohen, Wei, DeFraia and Drury (2011) suggest that the human voice is an instrument that can produce an array of expression in everyday speech. Just as musicians skilfully use elements of pitch and rhythm in a variety of combinations to convey an intended meaning of a composition, one can use their voice to combine these two elements to assign meaning and emotion to the words being spoken (Cohen et al., 2011). In speech, these elements are reflected in one’s verbal fluency, prosody, and pronunciation; and are skills deemed necessary for the development of oracy (University of Cambridge, 2014b).

1.3.3 Significance of Oracy

The ORACY Australia Association Inc. (2017) defines oracy as “[the] general ability in the skills of speaking and listening” (par. 2). Our ability as humans to communicate and express ourselves is primarily achieved through speaking and listening, and it is
the combination of these two skills that form the foundation of oracy. Regardless of one’s cultural or linguistic background, children use spoken language to “express, convey, mediate and manage actions, emotions and knowledge” (Saracho & Spodek, 2007, p. 697). Recognising oracy as important for all children, this research focused specifically on its development in students with English as an additional language or dialect.

An increased number of children grow up learning to engage in multiple languages as a result of increased international mobility (Whiteside, Gooch, & Norbury, 2016). Proficiency in the English language is of great importance for students with English as an additional language or dialect living in Australia (ACARA, 2014b; Ortega, 2009). Whiteside et al. (2016) report that compared to their monolingual peers, students with EAL/D tend to achieve lower academically. A study conducted by Goldfeld, O’Connor, Mithen, Sayers and Brinkman (2014) in Australia revealed that students with EAL/D were more vulnerable within all five domains of the Australian Early Developmental Index (AEDI), of which include language and cognitive development, and communication skills. This reinforces the need to assist the development of oracy skills for students with EAL/D, particularly given Australia’s recent immigration statistics.

Recent Australian statistics from the Migration Policy Institute ([MPI], 2015) indicate that immigration figures have continued to rise since 1960. Over a period of five years from 2010 to 2015, 48.8% of Australia’s population growth could be attributed to international migrants (MPI, 2015). When country of origin is considered for the top ten sending countries to Australia, the United Kingdom and New Zealand take out the top two positions and have English as their native language. However, the remaining eight countries do not have English as their native language. A total of
3,949,900 immigrants from the top ten sending countries were recorded by the Australian Bureau of Statistics (ABS) in June 2016, in which 2,040,400 (54.3%) of these immigrants do not have English as their first language or dialect. The United Nations, Department of Economic and Social Affairs (2013) statistics demonstrate the increase in primary school aged immigrant children (5 to 9 years old) within Australia at four time points: 1990, 2000, 2010, and 2013 where the number in Australia rose from 141,742 to 165,688, showing an increase of 23,946 children (14.5%) within a three-year period who may not have English as a first or native language. The Commonwealth of Australia (2016) reported a 13.3% increase of international school students in Australia within a 12-month period as of December 2016, with 51.8% originating from China. More specifically, 4,987 of the 23,325 international students are schooled in the state of Queensland, amassing to 21.38% (Commonwealth of Australia, 2016). Further, the top ten nationalities of international students within Queensland schools originate from a country where English is not their native language (Commonwealth of Australia, 2016). These statistics emphasise the need for immigrant children to develop their level of oracy as they attend Australian schools where they are not only required to learn the English language, but learn other school curriculum content through the medium of English. Developing the ability to communicate in the English language, primary school aged immigrants are better equipped to participate not only in an academic context, but in a range of social contexts and future occupational contexts (Rossiter, Derwing, Manimtim, & Thomson, 2010).

Maclure (1988) notes that teachers also shoulder the responsibility of teaching and developing students’ speaking and listening skills, further stating “teachers should be able to provide an environment which actively fosters further development of
children’s spoken language abilities” (p. 5). This is supported by Richards (2008) as he notes the growing need for English fluency is due to its priority at an international level. As such, the development of speaking and listening skills ought to have a prominent place in education. During the early years, emphasis in the curriculum is on the teaching of reading and writing (ACARA, 2012). Statistics from the Australian Government (2016) indicate that in 2015, 79.7% of English speaking children in their first year of school were developmentally on track in regard to their verbal communication skills. It is therefore understandable for a teacher’s focus to shift to developing children’s reading and writing skills in the early years. However, in comparison to English-speaking children, only 64.1% students with a language background other than English (LBOTE) demonstrated that they were developmentally on track, with 16.4% of children being reported as developmentally vulnerable (Australian Government, 2016). In conjunction with the continued increase in Australian immigration rates and students with EAL/D, it suggests that speaking and listening remain a teaching and learning focus in classrooms.

Various content descriptors within the Australia Curriculum documents (2012; 2014a; 2014b; 2015a) provide clear evidence that all students, even those with EAL/D, are required to demonstrate a variety of speaking and listening skills and capabilities throughout their academic journey. This reinforces that it is the responsibility of teachers to provide appropriate teaching and learning opportunities and environments that assist in students’ development of speaking and listening skills. Wilkinson (1965) developed the term ‘oracy’ and argues that similar to the value placed on literacy and numeracy education, oracy is just as fundamental to education. Despite its importance, Wilkinson (1965) indicates that oracy is not to be considered as a subject like literacy and numeracy, but “a condition of learning in all subjects” (p. 58).
The focus on the development of oracy is vital for students with English as an additional language or dialect, as “most facets of education contain some form of verbal communication: discussions, questions, or instruction” (McCormack & Klopper, 2016, p. 417). Chaudron (1988) outlines that 70 to 90% of ‘talk’ that occurs in language classrooms is done by the teacher. This statistic reinforces the need for students to develop and possess proficient oracy skills in order to engage with the teaching and learning that is occurring in the classroom, the curriculum content, and to complete specific teacher requirements. Consequently, if oracy skills are not adequately developed, students with limited speaking and listening proficiency in the English language will not only struggle academically, but also in a range of aspects of their life (Australian Government, 2016; McCormack & Klopper, 2016). Teachers today are encouraged to develop students as active learners through the use of a range of teaching and learning pedagogies appropriate for the year level (ACARA, 2017b; 2017c). As such, education policies in regards to the education of students with EAL/D and the teaching of oracy need to be reviewed to identify strategies and approaches that are being implemented.

1.3.4 Current educational policies and practices for students with EAL/D

The Universal Declaration of Human Rights (UNESCO, 1948) puts forward that education is a fundamental right for all human beings. Furthermore, the United Nations Convention on the Rights of the Child (UNESCO, 1989) supports this by stating in Article 28 that “[a]ll children have the right to an education,” thus protecting and promoting their right to learn and grow. The recent Incheon Declaration (UNESCO, 2015) further outlines the global commitment to quality education through its renewed agenda ‘Education 2030’, moving “towards inclusive and equitable quality education and lifelong learning for all” (p. 3). This asserts that students with EAL/D not only have
access to and be provided with education, but an education that is inclusive, equitable, and of quality. Consequently, those students with English as an additional language or dialect have the right to attend English-speaking schools and receive appropriate education to ensure they learn and grow as individuals as a result of such international legislation. Whilst this educational right is mandatory, there are no legislation or policy that specifically highlights learners with English as an additional language or dialect; it is up to individual countries to direct the learning of such students.

The Melbourne Declaration on educational goals underpins Australian education for young Australians (Ministerial Council on Education, Employment, Training and Youth Affairs [MCEETYA], 2008). This document informed the development of the Australian Curriculum documents (ACARA, 2012) emphasising goals to help students become “successful learners; confident and creative individuals; and active and informed citizens” (MCEETYA, 2008, p. 7). In the Australian context, there is the tendency for students with EAL/D to be integrated within mainstream classrooms and not only expected to learn Standard Australian English (SAE), but also to learn school curriculum content in what would be a ‘foreign’ language to them. Not all Australian schools are equipped to assist students who have English as an additional language or dialect, as not all teachers have EAL/D training and resources. Frequent changes in policy have led to teacher confusion in how best to cater to students with EAL/D in the mainstream classes (Alford & Jetnikoff, 2011). To address this challenge, ACARA has developed and made readily available an EAL/D Teacher Resource which (ACARA, 2014a; 2014b; 2015a) comprises of a number of publications that provide advice and strategies for non-specialist EAL/D teachers who may have students learning EAL/D in their mainstream classroom as well as the
Bandscales State Schools (Queensland) for EAL/D learners\textsuperscript{1} (Education Queensland, 2017) to assist in the curriculum mapping and assessment of such students. Although this EAL/D Teacher Resource (ACARA, 2014a; 2014b; 2015a) recognises the importance of ‘oral language’ across all learning areas of the curriculum and provides educators with some teaching strategies for English content descriptions, they are not sufficiently explicit to help teachers develop the particular oracy skills of fluency, prosody, and pronunciation. This, together with earlier findings, reinforces the need to develop interventions applying a musical approach that targets the development of oracy skills for students with EAL/D and investigate the effectiveness of these interventions for their ability to develop the level of verbal fluency, prosody, and pronunciation. This will then provide educators with detailed musical alternatives to develop the oracy in students with English as an additional language or dialect.

The use of music is considered an engaging approach to develop language, and consequently oracy, in students with English as an additional language or dialect as music is exists within all cultures and communities (Rebuschat, 2012). Our regular exposure to and experience with music on a daily basis, and the neurological similarities indicating connections between music and oracy, suggest the potential for a music to assist in the development of oracy in students with English as an additional language or dialect. One phenomenon that effectively demonstrates the relationship between music and oracy is ‘song’.

1.3.5 Connection between song and oracy

Fonseca-Mora et al. (2011) assert that ‘song’ and the act of singing is seen to rely upon a mix of both linguistic and musical information. Reinforcing the connection

\textsuperscript{1} The EAL/D Bandscales assist Queensland state school teachers map students’ English learning progress so they can provide the necessary support for students to achieve curriculum outcomes.
between music and speech, researchers have demonstrated the use of song to improve children’s pronunciation (Gan & Chong, 1998), stress and duration (Palmer & Kelly, 1992), and pitch (Lems, 2001; Richards, 1975), tone (Ara, 2009; Garcia-Conesa & Juan-Rubio, 2015; Richards, 1975), and intonation (Richards, 1975; Shen, 2009). These are all elements and skills required for the development of oracy (University of Cambridge, 2014b). Other studies have also indicated that song assisted in the development of memory (Murphey, 1990). Falioni (1993) state “many people often remember rhyme, rhythm and/or melody better than ordinary speech” (p. 93). This practice is beneficial to students learning English as an additional language or dialect as it can aid in remembering specific pitch and rhythmic elements of the spoken English language. Such connections could be economised and exploited when developing oracy for students with English as an additional language or dialect as they cannot only develop oracy, but affect students’ motivation levels.

Slevc and Miyake (2006) conclude that there are motivational properties associated with the music in songs. It is children’s love of singing and imitating (Fonseca-Mora et al., 2011) that suggests music can serve as “a source of motivation, interest and enjoyment” (Ara, 2009, p. 169), which retains students’ attention and assists them in the learning of the English language in a fun, entertaining, and engaging way. Song can also offer a change from routine language learning procedures evident in classrooms. This can further motivate students to learn as they are presented with learning opportunities and experiences that are enjoyable and reduce anxiety that is generally associated with language learning (Ara, 2009; Eken, 1996; Shen, 2009). These findings support the benefit of using song as an instructional tool to develop the oracy skills for students with English as an additional language or dialect as it serves as motivation for students to engage in content and learning.
1.3.6 Developing oracy for students with EAL/D through music

When investigating the development of oracy in young children, the use of music can be considered an effective approach due to its prominence in their daily lives, regardless of cultural background, and engaging nature that can assist in minimising anxiety levels. Furthermore, the specific elements and processes that are evident in musical experiences and teaching and learning practices are closely connected to aspects of oracy (Taggart, Bolton, Reynolds, Valerio, & Gordon, 2000). It is this relationship that is central to this investigation.

Research outlining the interconnectedness between music and speech have primarily been one-off or short term scientific experiments (Delogu, Lampis, & Belardinelli, 2010; Pfordresher & Brown, 2009; Tanaka & Takano, 2000; Thompson, Schellenberg, & Husain, 2004). Although this current study was also short-term, it sought to provide a different perspective in the music-speech connection by investigating the development of elements of oracy (verbal fluency, prosody, and pronunciation) in students with English as an additional language or dialect through the medium of song. This study used an experimental methodological approach by implementing a music intervention over a period of eight weeks.

One such alternative investigated in this thesis is the development of verbal fluency, prosody, and pronunciation through an intervention that focused on the musical elements of pitch and rhythm. Gordon’s Music Learning Theory (MLT) focuses on one’s experience, engagement, and exploration of pitch and rhythm, and through such interaction, students have the opportunity to attain the instruction goal of MLT, that of audiation. As defined by Gordon (2005, p. 11), audiation is the ability “to give meaning to music when sound is not physically present or may never have been physically present,” and can be considered the musical equivalent of our ability to think
in a language (GIML, 2017b). Developing the ability to audiate in students with English as an additional language or dialect is beneficial as it can assist their acquisition of Standard Australian English. Students will not only need to recognise and understand the subtleties in pitch and rhythm changes in English speech to gain the intended meaning, but also produce them themselves when speaking English.

An intervention which draws upon the principles of audiation, with a focus on pitch and rhythm patterns, could assist students with EAL/D to focus on the subtle changes within each, and to develop and internalise them so that it can translate and assist with their expressive communication in the English language. This is based on the premise that they will be able to hear the appropriate sounds of the English language in their head before producing them verbally – that being pitch inflections, pronunciation, and stress. This intervention has the potential to act as a catalyst for a specific teaching practice for Australian teachers that has the potential to support the development of oracy for students with English as an additional language or dialect.

1.4 RESEARCH QUESTION AND AIMS

Drawing from the principles of audiation from Gordon’s Music Learning Theory (MLT), a music intervention was designed and introduced to six recently arrived primary school aged immigrant participants with EAL/D to investigate the potential effects on the development of oracy (verbal fluency, prosody, and pronunciation). The aim of this research was to investigate the potential of a music intervention, based upon the principles of audiation, to develop the specific oracy skills of verbal fluency, prosody and pronunciation in primary school students for whom English is an additional language or dialect (EAL/D). To achieve this, two research questions were formulated:
1. What is the effect of a music intervention on the musicality of students with English as an additional language or dialect? and

2. What is the effect of a music intervention on the oracy (verbal fluency, prosody, and pronunciation) of students with English as an additional language or dialect?

1.5 METHODOLOGY AND RESEARCH DESIGN

A single-subject experimental design methodology was employed to support the exploratory nature of this research and diversity of students. This required the collection of data at an individual participant level to ascertain the impact of the intervention on the behaviour and performance of each participant (Burgard, Foster, Krasy, & Radel, 2011). Students were randomly assigned into pairs whereby they participated in three 30 minute lessons, three times a week for eight weeks. A total of 12 songs from the Jump Right In: the Music Curriculum Teacher’s Guide Book 1 (Taggart et al., 2000) were used. Three songs were used over a fortnight period, whereby the lesson focus would shift from the tonal elements of the song in the first week, to the rhythmic elements in the following week, thus ensuring alignment with the teaching of audiation within Gordon’s Music Learning Theory.

A mixed-methods approach to data collection and analysis was employed to evaluate the following aspects of oracy: verbal fluency, prosody, and pronunciation. Data collection techniques included: student audio voice recordings, structured and semi-structured interviews, the collection of documents (Bandscales State Schools (Queensland) for EAL/D learners), and the Primary Measures of Music Audiation (PMMA) computer generated test. Qualitative data was thematically analysed to identify emerging themes and patterns, and verbal fluency, prosody, and pronunciation
of students’ verbal output were an a priori of themes that were selected prior to the research. Furthermore, qualitative data was analysed through the use of the Student Oral Language Observation Matrix (SOLOM) and EAL/D Rating Scales. Additionally, student voice recordings were analysed for mazing behaviour (filled pauses and repetitions within speech) using the computer software program Systematic Analysis of Language Transcripts ([SALT-NZAU] Miller, Andriacchi, Nockerts, Westerveld, & Gillon, 2016) to provide a quantitative evaluation of the development of students’ verbal fluency as a result of the music intervention. Quantitative data was analysed by the PMMA computer program whereby the numerical scores students achieved provided additional raw and composite rankings in accordance to their year level that could then be compared to the potential development of specific oracy skills. Both the qualitative and quantitative data sets were triangulated so as to support or refute outcomes of the research.

From this research, it is anticipated that the results will:

- contribute to the field of music education and in particular the application of Music Learning Theory to other subject areas; and
- inform the teaching and learning practices of students with English as an additional language or dialect (EAL/D).

### 1.6 LIMITATIONS OF THE RESEARCH

Limitations of this particular study are presented here to explain what this research does not cover, and highlight what it does. The following limitations are considered:

1. A variety of skills are required for oracy; however, this research only investigated verbal fluency, prosody, and pronunciation. Therefore, results
obtained from this research cannot be associated with the development of other oracy skills; separate investigation would be required.

2. Although elements of Gordon’s Music Learning Theory were selected and adapted for the music intervention, it cannot be assumed that this specific musical approach is the correct and/or only way to investigate the potential of music in developing verbal fluency, prosody, and pronunciation in students with EAL/D.

3. The music intervention was conducted over an eight-week period due to the organisation of Australia’s 10-week school calendar term, access to student participants, and baseline data collection period. Therefore, effects of the intervention can be considered as preliminary to guide future longitudinal research.

4. Only students from Years one and two were asked to participate in this study given research suggesting a critical learning period for children learning an additional language or dialect is before the age of 10. Consequently, findings in regards to the development of oracy (verbal fluency, prosody, and pronunciation) could not be applied to other age groups.

5. Only one case site (school) was used for data collection due the experimental nature of this research. Therefore, results from this research could not be applied to other students in various geographic locations and from different sociocultural and socioeconomic contexts.

6. This study is not a randomised trial due to lack of control group. Therefore, it is recognised that students’ oracy development could be due to other factors within the specialised English learning environment provided at the case site.
Though recognising and acknowledging these limitations, it can be concluded that this particular research is experimental in nature. Oracy is seen to encompass a variety of skills. However, it is to be noted that this study only investigates the development of verbal fluency, prosody, and pronunciation as a result of them reflecting similar elements required for meaning making in both music and speech. Despite the aforementioned limitations, this study does provide valuable knowledge and insight into the area of music and aspects of oracy using a specific intervention. Results are considered preliminary and a foundation from which future research in this specific area could be explored.

1.7 ORGANISATION OF THESIS

Chapter Two introduces a number of academic sources that contextualise this research project within the extant of dominant literature in the fields of music and oracy. Key issues are outlined and gaps in the literature are identified and explored. The chapter concludes with a summary of the main findings from the literature review.

Chapter Three details the research methodology and design, including the purpose of the research, intervention design, and procedures involved. These include ethical considerations, sampling techniques, data collection and analysis techniques.

Chapter Four presents and discusses data in regards to the development of musicality for students with English as an additional language or dialect. This data outlines the levels of musicality through the PMMA computer generated test which was administered as a pre- and post-intervention test. This data is used to answer sub-question 2: what is the effect of a music intervention on the musicality of students with English as an additional language or dialect?
Chapter Five presents and discusses data in regards to the development of oracy for students with English as an additional language or dialect. This data highlights levels of verbal fluency, pronunciation, and vocabulary for each student participant on a weekly basis throughout the duration of the intervention. It addresses sub-question 1: what is the effect of a music intervention on oracy (verbal fluency, prosody, and pronunciation) of students with English as an additional language or dialect?

Chapter Six provides a summary of salient points from research findings. Based on the conclusions reached, theoretical and practical implications of the research are provided and recommendations for further research are presented.
LITERATURE REVIEW

2.1 INTRODUCTION

Chapter Two presents a review, evaluation, and analysis of the literature which underscores the key questions of this study:

1. What is the effect of a music intervention on the musicality of students with English as an additional language or dialect? and

2. What is the effect of a music intervention on the oracy (verbal fluency, prosody, and pronunciation) of students with English as an additional language or dialect?

This chapter presents a discussion about music, under the banner of Arts Education drawing on policies and previous research to outline how music has come to be a prominent learning area in education as a result of its benefits for students. It then presents the dominant approaches to the teaching and learning of music, before acknowledging the similarities between music and speech through Gordon’s Music Learning Theory (MLT) and shared elements of pitch and rhythm. After recognising the reflection of musical elements more specifically in tonal languages throughout the world, the chapter moves to define and discuss students with English as an additional language or dialect and their learning needs. With oracy identified as an area of
importance for students with EAL/D, the chapter then moves to discuss international and national educational policies and practices in regards to the teaching of oracy for students with EAL/D, before illuminating how music can be used as a medium to develop oracy in English for students with EAL/D, in particular fluency, prosody, and pronunciation. Finally, the chapter concludes with a summary reinforcing the value of music in education and how Gordon’s Music Learning Theory (MLT) has the potential to develop the oracy for students with EAL/D based on its similarities to learning a language.

2.2 MUSIC IN EDUCATION

Music is considered an important aspect in our lives; however, despite our desire for it, past beliefs considered music as only for the elite and unnecessary for everyone else (Ewing, 2011; Garfias, 2004). Today, however, music frequently falls under the banner of ‘Arts Education’ and is an option available to all students.

2.2.1 INTERNATIONAL MUSIC EDUCATION

Globally, the recognition, appreciation, and implementation of Arts Education has only occurred in recent decades. The United Nations Educational, Scientific and Cultural Organisation (UNESCO) first recognised Arts Education in 1948; however, it was only to highlight its place within general education through the exchange of information to encourage improvements to music teaching and learning pedagogies. Although this was outlined, there was no strategy as to how this would proceed or clear outcomes to be achieved. As a result, the Arts, whilst still having its own curriculum, came to be considered as peripheral by western cultures and education systems toward the end of the 20th Century, with primary focus placed on literacy, numeracy and science curriculums (Ewing, 2011). The 30th session of the UNESCO General Conference
(1999) challenged this perception by recognising Arts Education as fundamental. It was viewed as a means to develop student creativity, promote cultural diversity, and construct a culture of peace, but only as a cross-disciplinary role. Arts Education was perceived as an important influence on individuals, shaping their personality and behaviour, as well as realising their full potential and maintaining their emotional balance (UNESCO, 1999). This is reflected in my research as learning through music acted as a means to not only encourage student creativity, but to shape both their linguistic and social behaviour, and reduce anxiety that has the tendency to occur in language learning situations.

The last decade has recognised the value and importance Arts Education holds for students in regards to their cognitive and emotional development, as well as acquiring skills demanded of 21st Century societies. The Road Map for Arts Education (UNESCO, 2006) was the first document that intended to strengthen Arts Education at an international level through the provision of practical and theoretical frameworks. Creativity and cultural diversity were recognised as 21st Century needs, and this document aimed to explore how Arts Education could meet this need (UNESCO, 2006). As an evolving reference document, the Road Map for Arts Education (UNESCO, 2006) emphasises changes and strategies required to introduce and integrate Arts Education in teaching and learning, and provides direction for future action and decisions in this discipline.

The key aims of this document (UNESCO, 2006) are reflected in this research. Student creativity is developed through the listening and performing of musical content and engagement with musical activities. Student participants all originate from countries with different cultures and a native language that is not English, therefore, the exposure to and teaching through Western music promotes the current culture in
which students are living. This is supported by Bamford (2006) as she indicates that a nations’ unique cultural circumstances are reflected through the Arts, including music. Additionally, the use of music was able to provide future knowledge and actions in the field of Arts Education.

The Road Map for Arts Education (UNESCO, 2006) emphasises that cognitive, social and emotional development is stimulated when teaching and learning is conducted in and through the Arts; how and what is learned is made more relevant by meeting the needs of the current environment in which they live and interact. This was reflected in my research through the investigation of music’s potential to stimulate cognitive development in regards to English speaking skills, highly relevant when living in an English-speaking country. This focus on developing English is accentuated by the UNESCO Universal Declaration on Cultural Diversity (2001) Action Line 6, as it outlines that although students’ mother tongues are to be valued and respected, linguistic diversity is encouraged as is the learning of multiple languages at a young age. Potential social and emotional developments were considered during the data analysis phase of this research, as UNESCO (2006) indicated they could arise given that teaching and learning was conducted through the Arts, more specifically music. As English is an additional language or dialect for student participants, feelings of anxiety and fear toward learning and interacting with a foreign language could manifest (Fonseca-Mora et al., 2011). Learning through the Arts could assist in capturing and maintaining students’ interest and enthusiasm to learn English and express themselves in a less demanding environment whilst developing their ability to work in groups (Ewing, 2011). Although the Road Map for Arts Education (UNESCO, 2006) suggests such improvements are possible, it does not explicitly outline teaching approaches to implement in order to develop students’ cognitive, social and/or
emotional capacities. This reinforced my research to create a music intervention with a specific approach that could guide teachers in developing the level of English for students learning English as an additional language or dialect.

The value of Arts Education at an international level continued to be recognised at the Second World Conference on Arts Education, where the major outcome was the Seoul Agenda: Goals for the Development of Arts Education (UNESCO, 2010). This document built upon the Road Map for Arts Education (UNESCO, 2006) by serving as an action plan, and enlarging the scope to acknowledge the “socio-cultural dimensions of arts education, embrace the diversity of learning environments and reinforce the role of arts education in social cohesion and cultural diversity,” all of which are reflected in this research (UNESCO, 2016, para. 1). Although a new agenda, Arts Education is still internationally recognised as valuing creativity and cultural diversity, as proposed by the Road Map for Arts Education (UNESCO, 2006), but with more specific strategies and actions for individual countries to build their national Arts curriculum. While strategies have been outlined, it is not a definitive list and the strategies outlined do not specifically target students with EAL/D.

Global policies and research acknowledge the benefit and value of Arts Education within education systems to develop student creativity and cultural diversity, as well as cognitive, social and emotional skills. These international policies mandate what Arts Education ought to be providing for students. Each country is expected to respond through the creation of localised Arts Education curriculum.

2.2.2 NATIONAL (AUSTRALIAN) MUSIC EDUCATION

Klopper and Garvis (2011) outline that it is only in the last two decades that Arts education within Australia has been considered a learning area that is important for
students. A National Affiliation of Arts Education was established in 1989 and ensured the Arts was included as one of the Key Learning Areas when a national curriculum was developed. The responsibility fell to each of the Australian States and Territories to provide their own Arts curriculum. Despite these international policies outlining the need for quality Arts Education, consistency could not be ensured. In 2007, the Ministerial Council for Education, Employment, Training and Youth Affairs (MCEETYA) and the Cultural Ministers Council (CMC) stated “all children and young people should have a high quality arts education in every phase of learning” (p. 5). As of 2012, Australia was able to claim a national curriculum in which the learning area of The Arts (ACARA, 2013) could nationally meet the priority outlined by MCEETYA and CMC (2007). This reaffirms the value and benefit of the Arts in education as contributing to the development of students’ imagination, creativity, and variety of skills and processes. The Arts learning area within Australia’s national curriculum (ACARA, 2013) includes five arts subjects: music, dance, drama, visual arts, and media arts. As this research focuses on music, it will be the only subject from the Arts learning area that will be discussed.

Music’s prevalence within society and our everyday lives supports the teaching and learning of it so that students are able to learn and understand a variety of places, times, cultures, and contexts through their active participation in music (ACARA, 2013). Whilst all arts subjects have the capacity to engage and enrich students, and encourage their creativity and expression, ACARA (2013) states that music has a significant impact on students in regards to their “cognitive, affective, motor, social and personal competencies” (p.92). ACARA (2013) suggests that learning through music is a process that ought to be continuous and sequential, as it allows for skill acquisition and developing with increased complexity. This research recognised the prevalence
of music ACARA (2013) indicated, as all student participants could attempt to engage in music learning to some extent regardless of background and experience. Suggestions that music significantly impacts other skills and processes was noted and referred to when analysing data to further support such claims. Additionally, the emphasis of ensuring a sequential process was taken when learning music was considered throughout the intervention design process so that skills were taught to allow for gradual increase in complexity.

The Australian Curriculum: The Arts (ACARA, 2013) outlines that musical knowledge and skills are developed through elements of music: “rhythm, pitch, dynamics and expression, form and structure, timbre and texture” (p. 93). In Australia, students’ initial exposure to music at school starts from Foundation Year. The Foundation to Year 2 portion of the music curriculum comprises of structured activities for students to engage in, but in the form of purposeful and creative play (ACARA, 2013). Over these years, such activities aim for students to increase their awareness of a variety of musical elements, explore and discriminate between sounds and silence, and recognise a beat or tempo and move and performed to it (ACARA, 2013). Considering the age of the potential participants of this research, I turned to ACARA (2013) to inform what was to be taught and expected of students in Foundation to Year Two when learning music in Australian schools. It also provided guidance in regards to the general knowledge and skills students within this year bracket ought to be learning and exhibiting.

Although Ewing (2011) notes that large-scale longitudinal research in regards to the effects of learning in and through the Arts had been lacking in Australia, several studies have been conducted since the start of the 21st Century in Australia outlining the benefits of arts-based interventions for students (Table 1).
Table 1.

**Arts-based education studies in Australia**

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Key Findings</th>
</tr>
</thead>
</table>
| Bamford, Newitt, Irvine, and Darrell (2004) | • Improved reading comprehension and character interpretation  
• Increased confidence in expressing ideas and thoughts  
• Improved written and oral communication  
• Increased student independence and motivation |
| Bryce, Mendelovits, Beavis, McQueen, and Adams (2004) | • Increased self-esteem  
• Increased co-operation during group work  
• Learning to plan and set goals  
• The transfer of Arts skills to other curriculum areas |
| Haynes and Chalk (2004) | • Increased student self-confidence  
• Creation of a learning environment that was relaxed and enjoyable |
| Klopper and Garvis (2011) | • Increased student motivation and involvement  
• Increased English language proficiency |
| McMahon, Klopper, and Power (2015) | • Increased self-confidence and self-worth  
• Increased confidence in technical (artistic) skills  
• Increased confidence in problem-solving abilities |
| Russel-Bowie (2009) | • Academic achievement  
• Respect for self and others  
• Generic life skills  
• Self-expression |
| Shillito, Beswick, and Baguley (2008) | Increased self-expression abilities |
| Tait (2004) | • Improved numeracy skills  
• Improved reading ability  
• Improved quality of student-teacher relationship |
| Temmerman (2005) | • Enhancement of life skills such as:  
  o Problem solving  
  o Team work  
  o Communication  
  o Creative interpretation-skills |

Table 1 evidences studies that have been conducted over the last two decades that indicate positive effects of music and arts-based interventions on academic achievement, motivation and engagement in learning, student self-esteem and self-confidence, and consolidation of relationships. In particular, one recommendation from Tait’s (2004) study is for research to evaluate targeted programs on specific groups
such as immigrants and refugee children. Key findings from studies presented in Table 1 were considered as potential effects during the data analysis phase of this research project, as they all used music in attempt to investigate its effect on social, emotional and cognitive domains, which could have surfaced in my research given the implementation of a music intervention. Therefore, these additional and unintended results could have influenced particular elements my research was investigating. Tait’s (2004) recommendation was also noted as this research investigated the effects of a music intervention on young immigrant and refugee children studying in Australian schools. Consequently, my research can provide more recent evidence to the growing body of arts-based studies in the Australian context.

Not discounting the small-scale studies presented in Table 1, more recent research (The Song Room, 2013) has been conducted in Australia to measure the impact of music and arts interventions on academic achievement and social and emotional wellbeing, yet on a larger scale and using a longitudinal approach. The Song Room (2013) had a vision for all Australian children to be provided with opportunities to engage in music and the Arts. The Song Room conducted a three-year study on students from a low socioeconomic area and primarily of an Indigenous or a non-English speaking background (Vaughan, Harris, & Caldwell, 2011). The study measured the impact of students’ participation (one hour per week) in an arts-based intervention, and reported significant positive results for attendance, literacy and numeracy, and social and emotional wellbeing. This recent research is critical in demonstrating the intrinsic and extrinsic benefits of music and arts-based programs on students. These results support the belief to continue researching the implementation of music interventions on students to consolidate current findings and investigate additional benefits, such as the development of other cognitive skills beside
literacy and numeracy. Vaughan et al. (2011) have particularly informed this research as a music intervention was also used on students from non-English speaking backgrounds, and provides guidance on intrinsic and extrinsic benefits that could have surfaced during data analysis. Although not large-scale and longitudinal, this research can add to a growing body of knowledge in regards to music and arts-based interventions that Ewing (2011) suggested has been lacking in Australia.

It is recognised that significant data has recently surfaced in regards to the effects of music and arts-based interventions on broader student learning outcomes in the Australian education context. Not only has this research project needed to present the effects that have surfaced thus far in regards to the use of music and its benefits for students in educational settings, but recognise the variety of approaches to music learning that exist. Consideration of some of the more dominant approaches to music education was thus necessary as they helped frame the most appropriate approach to draw upon when creating the music intervention for this research.

2.3 DOMINANT APPROACHES TO MUSIC LEARNING

Music educators can adopt a number of “approaches, methods, techniques, and materials are matters of great relevance for practice” (Abril, 2016, p. 17). Approaches can be defined as a broad framework that consist of philosophical underpinnings that can “guide and provide a frame of mind for planning and decision making in the classroom” (Abril, 2016, p. 17). However, the term capital ‘M’ for Method is more relevant and evident in music as it is not only a linear framework and step-by-step guide in regards to the specifics of ‘what’, ‘when’ and ‘how’ within lessons, but “a codified system for teaching and learning that has been described in great detail and practiced based on some guiding principles, beliefs, or theories about music, learning,
and/or teaching” (Abril, 2016, p. 17). Chosky, Abramson, Gillespie, Woods, and York (2001) highlight methods as having “a unified body of pedagogy unique to it (a body of well-defined practice)” (p. 2). Methods can provide educators with a systematic and/or sequenced plan, and various experiences in order to achieve set musical objectives (Flohr & Trollinger, 2010).

Some of the most recognised and accepted methods in music teaching include Dalcroze, Kodály, Orff, Suzuki, and Gordon (Table 2). While educators may have a preference for a single method, or a combination, what is best for both teacher and student(s) ought to be considered for the teaching and learning of music (Flohr & Trollinger, 2010). The five aforementioned methods to the learning of music were developed prior to 1960, yet despite their traditional approaches, they are still exercised by a number of educators today.

2.3.1 FIVE DOMINANT MUSIC EDUCATION APPROACHES

There are five dominant approaches for teaching music to children: Dalcroze, Kodály, Orff, Suzuki, and Gordon. Table 2 provides an overview of each of these more preferred approaches with more detailed explanations below.
### Table 2
Methods for teaching music to children

<table>
<thead>
<tr>
<th>Method</th>
<th>Fundamental Idea</th>
<th>Instructional Goal</th>
<th>Primary Musical Vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dalcroze</td>
<td>Emphasis on rhythmically musical performance. For every musical sound, there is a movement gesture (preschool through college)</td>
<td>Good rhythm (eurhythmic) and ear training; improvisation; musical expression</td>
<td>Improvisation and movement</td>
</tr>
<tr>
<td>Kodály</td>
<td>Music literacy for all children (birth through upper elementary)</td>
<td>Music Literacy</td>
<td>Singing (usually a cappella); moving with hand signals</td>
</tr>
<tr>
<td>Orff</td>
<td>Teach music to follow historic development; start with chant and simple rhythm instruments (preschool through upper elementary)</td>
<td>Improvisation; music creation</td>
<td>Percussive instruments; mallet instruments; voice is secondary</td>
</tr>
<tr>
<td>Suzuki</td>
<td>Humanitarian education and personality development; talent education (3 years through adulthood)</td>
<td>Performance skills and ear training</td>
<td>Violin, viola, cello, bass, piano, flute, guitar, harp, recorder</td>
</tr>
<tr>
<td>Gordon</td>
<td>Based on Gordon’s music learning theory using eight-step process (birth through elementary age and above)</td>
<td>Audiation; sound before symbol; tonal and rhythm hearing; and performance</td>
<td>Listening, reading, singing</td>
</tr>
</tbody>
</table>

Source: Flohr and Trollinger (2010, p. 139).

#### 2.3.2 THE DALCROZE METHOD

The Dalcroze approach was developed by Emile Jacques Dalcroze (1865 – 1950) and is often referred to as Dalcroze Eurhythmics. Campbell (2008) describes this learning process as a movement based pedagogy, in which all musical ideas originate from the human body (Dalcroze Australia, 2017). This reflects Dalcroze’s belief that “humans feel emotions by various sensations produced at different levels of muscular contractions and relaxation,” which is similar to movement in music through tension and release (Campbell, 2008, p. 141). This approach to music learning primarily focuses on rhythmic performance through the recognition that every musical sound has a movement or gesture (Campbell, 2008; Flohr & Trollinger, 2010). Expression and creativity are emphasised through the Dalcroze approach, in which opportunities are provided for students to first respond to what they hear through movement before
translating it to other musical forms of expression, enabling the immediate response to music (Campbell, 2008). Dalcroze recognised and understood the benefits of movement; especially how it can assist students perform music with expression.

2.3.3 THE KODÁLY METHOD

Zoltan Kodály (1882 – 1967) was a Hungarian composer, educator, ethnomusicologist, linguist, author and philosopher for whom this approach was named. Musical literacy is the key goal emphasised within this approach to music education whereby the complete musician could be developed through the synthesis of necessary skills, and an appreciation for music established through direct experience with music (Flohr & Trollinger, 2010; Kodály Music Education Institute of Australia [KMEIA] Queensland, 2015). Through its instruction, the Kodály approach is one that attempts to reflect how children learn naturally, in which each skill and concept is developed gradually and sequentially in order to achieve musical literacy (KMEIA, 2017).

Recognising that everyone has an innate musical aptitude and that no individual can be complete without music, the commencement of teaching music as early as possible is a philosophical underpinning of the Kodály approach (KMEIA Queensland, 2015). Although it is recognised that Kodály did not develop various components of the approach, it is commonly understood to be a collection and compilation of particular strategies that formed this method that Campbell (2008) describes as a “well-ordered and logical system of materials and techniques” (p. 133). One of the most significant features of this approach is the use of the voice and movement; an incentive for music educators as the human voice is the most readily accessible instrument. This approach is one that provides music educators with the freedom to adapt instruction to suit the individual needs of students.
2.3.4 THE ORFF-SCHULWERK METHOD

Pioneered by German composer Carl Orff (1895 - 1982) and colleagues in the 1920s was the Orff-Schulwerk approach to music education. It is considered a holistic approach that aims to nourish and develop the whole child “through elemental activities in music and movement” (Australian National Council of Orff Schulwerk [ANCOS] Inc., 2017, para. 1). Various levels of play are evident in music instruction within this approach, and encourages active music making through the combination of “singing, body percussion … tuned and untuned instruments, movement and dancing, and speech activities” to promote active music making (ANCOS Inc., 2017, par. 2).

Paramount in the Orff-Schulwerk philosophy is improvisation (ANCOS Inc., 2017), which is the instructional goal of this approach in conjunction with musical creation (Flohr & Trollinger, 2010). With instruction being flexible and adaptable, teachers are able to adopt a position whereby they guide students to musical discoveries through the provision of creative ideas. The Orff-Schulwerk places primary emphasis on experimenting with sound and movement (Flohr & Trollinger, 2010), paving the way for students’ improvisations and compositions to build new knowledge and create a lifetime of enjoyable musical experiences.

2.3.5 THE SUZUKI METHOD

The Suzuki approach can also be referred to as Talent Education and was developed by Shinichi Suzuki (1898 – 1998). It is seen to combine educational philosophy, pedagogical methods, psychology, and implicit social construction (Kendall, 1986). The Suzuki approach acknowledges that all children possess musical ability (International Suzuki Association, 2017). While this ability can be developed through a learning environment that is nurturing, the Suzuki approach is seen to focus on education through music in attempt to develop the whole child (International Suzuki
Association, 2017). This reflects the instructional goal of this approach as it primarily focuses on performance and aural training. As a violinist himself, Suzuki first applied his ideas to the teaching of string instruments; however, this approach has since evolved and is now applied to the teaching and learning of a range of musical instruments (International Suzuki Association, 2017).

Suzuki determined when developing his approach that children’s development of their musical ear occurs as young as three, before they have even been exposed to music reading, which is reflective of children speaking their mother language before being able to read it (Flohr & Trollinger, 2010). Suzuki aimed to develop children’s musical ability through similar processes they undergo when learning their native language; orally and with “consistent listening, parental involvement, and positive reinforcement” and encouragement (Campbell, 2008, p. 30).

Whilst each approach to teaching music to young children has differing methods, musical vehicles, and foci, the approach deemed most appropriate to draw upon for the design of this research’s intervention was Gordon’s Music Learning Theory (MLT) which draws on the voice being the primary musical vehicle, the instructional goal of audiation, and its similarities to the language learning process.

2.3.6 GORDON’S MUSIC LEARNING THEORY (MLT)

Music Learning Theory (MLT) was developed by Edwin E. Gordon (2005), and for the last fifty years, he has been a leading advocate in understanding how students learn when they learn music. His theory has inspired teachers to individualise their instruction based upon student needs. The Gordon Institute for Music Learning (GIML, 2017a) outlines MLT as “how we learn when we learn music” (para. 1), and is
concerned with the exploration of and experience with musical elements of pitch and rhythm. Through their interaction with the musical elements of pitch and rhythm, students attain the instructional goal of Music Learning Theory, that of audiation. Audiation is defined by Gordon (2005) as the ability “to give meaning to music when sound is not physically present or may never have been physically present,” which is believed to be the foundation of musicianship (p. 11). The method of audiation has been referred to as similar to our ability to ‘think’ in a language, as sounds are given meaning and are able to be heard in our minds.

The principles of audiation from Gordon’s Music Learning Theory and its associated learning sequence activities enable teachers to cater to the individual needs of their students by adapting instruction. The GILM (2017c) outline that learning sequence activities are the part of the Music Learning Theory curriculum whereby specific tonal or rhythmic patterns are taught during the first five to ten minutes of the lesson. Consequently, this informed the structure of the intervention, the lessons in particular, to ensure the specific tonal or rhythmic pattern associated with the song were taught within the first five to ten minutes of the lesson. This would enable the researcher to assess students’ learning and singing of such patterns and thus assist in students’ greater understanding of the song as a whole and the development of their audiation ability.

2.3.2.1 MUSIC LEARNING SEQUENCE

Gordon (2007) states “music learning sequences are used to put music learning theory into practice” (p. 96). Four learning sequences are outlined by Gordon (2007) and include: (a) skill learning sequence; (b) tonal learning sequence; (c) rhythm learning sequence; and (d) pattern learning sequence. He further highlights that despite there being four learning sequences, they are all necessary and interdependent on all other
learning sequences. Notwithstanding the conjunction of all learning sequences, Gordon (2007) stresses “tonal learning sequence and rhythm learning sequence are never combined in learning sequence activities” (p. 97). Gordon (2007) explains that despite the interconnectedness of tonal and rhythmic patterns within a whole musical experience, they are taught independently of each other, because when tonal patterns are taught in combination with rhythm patterns, especially those in the initial stages of audiation, [students] will experience difficulty in recognising a particular tonal pattern when it is performed in combination with a different rhythm pattern or vice versa. (p. 104).

This informed and influenced the design and structure of the music intervention in this research, as it was warranted that while songs were the musical vehicle in which tone and rhythm were explored, the development of students’ tonal and rhythmic audiation ability required the focus of each week to alternate between the tonal patterns of the song one week, and the rhythmic patterns of the same songs in the following week. In order to develop students’ tonal and rhythmic audiation ability, the music skill learning sequence was drawn upon for the design of the intervention.

2.3.2.2 MUSIC SKILLS LEARNING SEQUENCE

When describing Music Learning Theory, GIML (2017e) states that when learning rhythmic and tonal content, there are “two main categories of levels of skill learning sequence: discrimination learning and inference learning” (para. 1). The GIML (2017e) describes discrimination learning as rote learning; students are conscious of what they are being taught, however, they may not fully comprehend. They continue to outline that inference learning occurs when students are unconscious of what it is they are
learning because they are teaching themselves, and can thus be deemed conceptual learning.

Discrimination learning involves students building a vocabulary of tonal and rhythmic patterns through echoing and imitating such patterns sung or chanted by the teacher, musically referred to as antiphonal. Inference learning involves students making their own discoveries as a result of their exposure and experience with familiar tonal and rhythmic patterns at multiple levels within discrimination learning. This provides students with the ability to identify, create, and improvise with unfamiliar patterns throughout the inference learning stage (GIML, 2017e). It is furthered that “students cannot learn to make inferences unless they have learned how to discriminate” (GIML, 2017e), which gives reason as to why discrimination learning is a teachers’ initial concern (par. 2).

Gordon (2007) states “without the ability to discriminate, we tend to believe everything sounds the same” (pp. 98-99). It is here that the learning of tonal patterns and rhythm patterns assists in the development of one’s tonal and rhythmic vocabulary, as the recognition of difference is encouraged instead of the passive acceptance of sameness. As Gordon (2007) highlights, “the more tonal patterns they [students] learn the sooner they are able to identify them… the better they can discriminate among and audiate tonal patterns in any tonality” (p. 103). This theory also applies to the learning of rhythm patterns; the more patterns students have learned provides them with the advantage to more effectively “discriminate and audiate differences among them” (Gordon, 2007, p. 104). This translates to the learning of language as a pattern in music is recognised as the basic unit of meaning, in which a word is the equivalent of this basic unit of meaning in language (Gordon, 2007). Gordon (2007) draws this comparison by stating that “the more words students
have in their listening, speaking, and thinking vocabularies, the better able they are to comprehend what is said to them and to make and draw conclusions of their own" (pp. 101-102).

As with auditory forms of communication (music and speech), the goal of audiation in sequentially developing tonal and rhythmic patterns has the potential to transfer from music to speech. This supports the approach of this research’s intervention using discrimination learning from MLT, as Gordon (2007) states that “to speak, sing, and chant, the ability to think words and audiate patterns must be internalised beforehand" (p. 102). The intervention implemented in this research aimed to increase students' tonal and rhythmic pattern vocabularies through imitation. This assisted their ability to discriminate sameness and difference in tone and rhythm as they were able to, eventually, audiate and perform the patterns accurately. Gordon (2007) highlights the importance of imitation for discrimination learning in music, and outlines that it is the same approach when learning a language, thus reinforcing why principles from MLT were draw upon when designing the intervention for this research. It developed tonal and rhythmic patterns that translated to students’ English speaking development.

Gordon recognises the processes and sequence involved when learning music within his Music Learning Theory (MLT) are similar to those when learning a language. Additionally, the skill of audiation developed through MLT and the primary use of the voice indicate the potential of using a musical approach that draws upon principles from Gordon’s Music Learning Theory to develop students’ speaking skills.

Reviews of literature suggest that despite the recognition of its similarities to language learning, Gordon’s Music Learning Theory and associated principles of
audiation have been used to teach music and to date have not been applied to other areas. In 1976, Palmer investigated the music instructional approaches of the Kodály method, Gordon’s Music Learning Theory (MLT), and traditional rhythm reading instruction, and their effects on general music students in year four in regards to rhythm reading. The experimental groups (Kodály and Gordon) achieved significantly higher results in meter/rhythm discrimination and performance (Palmer, 1976). Although no significant differences were evidenced between the two experimental groups, it was noted that the group who received MLT instruction had a slightly higher mean score than the Kodály instruction group (Palmer, 1976). This influenced the decision to draw upon the musical approach of Gordon’s Music Learning Theory for this study’s intervention, as the mean scores highlight it was more effective in developing students’ discrimination and performance skills in meter/rhythm, which is associated with verbal fluency in speech. A later study by Stockton (1982) concluded that in fostering rhythm understanding in university students, the rhythm learning sequence activities within Gordon’s MLT appear to be more effective than a traditional reading/listening approach. Stockton’s (1982) results influenced the selection of Gordon’s Music Learning Theory (MLT) as the musical approach to draw upon for this study’s intervention, as the learning sequence outlined by Gordon’s MLT proved more effective in developing rhythmic understanding than traditional approaches. It is recognised that the musical approaches of both rely heavily on a Capella style singing as the musical vehicle. However, it was the results from the Palmer (1976) study, that used both music methods of Kodály and Gordon to assess rhythm reading, which reinforced the selection of Gordon’s Music Learning Theory as the foundation which the intervention employed in this research was based. Although both methods (Kodály and Gordon) achieved higher scores than the control group, the higher mean score
achieved by those participants who received instruction from Gordon’s Music Learning Theory (MLT) suggested this approach the most appropriate for this research due to the investigation of prosodic characteristics of speech in students with EAL/D.

More recently, Hiatt and Cross (2006) used the principles of audiation over a 10-year period to develop sight-singing and performance skills for college-level teachers. Additionally, Liperote (2006) states that she indeed used and adapted the principles of audiation in regards to rhythmic and tonal patterns when teaching her students (elementary, middle and senior) so as to develop their aural skills early in their musical journey.

Although this music approach of Gordon’s Music Learning Theory has not been used in a linguistic context, it indicates the potential of this research to improve students’ cognitive abilities, in particular speaking in English, through music education and experiences as indicated by international and national legislation and policies. However, research has been conducted to investigate the relationship between music and other cognitive domains.

2.4 MUSIC AND OTHER COGNITIVE DOMAINS

2.4.1 NEUROSCIENCE CONNECTIONS

The influence of music has become a focus of neuroscientists and psychologists in regards to its effects on brain structure and development of other processes. Past research (Bever & Chiarello, 1974; Tervaniemi & Hugdahl, 2003; Zatorre, Belin, & Penhune, 2002) has suggested that music and language processing occurred in different hemispheres of the brain, whereby music functions were associated with the right hemisphere, and linguistic functions governed by the left. However, evidence has, and continues to, surface that highlights several similar functions and neural modules.
in both music and language, in particular speech, thus resulting in interhemispheric activation (Maess et al., 2001; Tallal & Gaab, 2006). Though still needing considerable more work conducted in this field, researchers have explored and discovered that “musical expertise … or musical training … can improve behavioural performance and modify brain substrates, not only in the musical domain but also in other domains” (Moreno, 2009, p. 329). It is suggested that this debate was initiated by a study conducted by Rauscher, Shaw, and Ky (1993). Their research promoted that participants’ increase in their spatial-reasoning abilities was a result of their brief exposure to a Mozart sonata. From such reports, public conclusions began to surface that ‘music makes you smarter’.

A study conducted by Schlaug, Jancke, Huang, Staiger and Steinmetz (1995) was one of the first to provide neurological evidence to illustrate differences in the anatomical structure of musicians and non-musicians’ brains. Their study concluded that the commencement of musical training before the age of seven years may facilitate “increased interhemispheric communication between frontal cortices (such as the premotor and supplementary moto cortex) subserving complex bimanual motor sequences” (p. 1050). From the Rauscher et al. (1993) study and considering the evidence provided by Schlaug et al. (1995), researchers were inspired and studies were conducted and indicated positive transfer effects of music and/or musical experience(s) on other cognitive domains (Table 3).
Table 3

Studies evidencing music’s influence in cognitive domains

<table>
<thead>
<tr>
<th>Source</th>
<th>Participants</th>
<th>Cognitive Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chan, Ho, &amp; Cheung (1998)</td>
<td>College students (n = 60)</td>
<td>Language</td>
</tr>
<tr>
<td>Graziano, Peterson, &amp; Shaw (1999)</td>
<td>Second grade children (n = 237)</td>
<td></td>
</tr>
<tr>
<td>Bilhartz, Bruhn, &amp; Olson (2000)</td>
<td>Four – six year olds (n = 71)</td>
<td></td>
</tr>
<tr>
<td>Graziano et al. (1999)</td>
<td>Six years eight months – eight years five months (n = 237)</td>
<td></td>
</tr>
<tr>
<td>Gardiner, Fox, Knowles, &amp; Jeffrey (1996)</td>
<td>First grade children (n = 96)</td>
<td></td>
</tr>
<tr>
<td>Rauscher et al. (1997)</td>
<td>Pre-school children (n = 78)</td>
<td>Symbolic and spatio-temporal reasoning</td>
</tr>
<tr>
<td>Gromko &amp; Poorman (1998)</td>
<td>Pre-school children (n = 15)</td>
<td></td>
</tr>
<tr>
<td>Brochard, Dufour, &amp; Despre’s (2004)</td>
<td>Musicians and non-musicians (n = 20)</td>
<td>Visuo-spatial abilities</td>
</tr>
<tr>
<td></td>
<td>Musicians and non-musicians (n = 24)</td>
<td></td>
</tr>
<tr>
<td>Brochard et al. (2004)</td>
<td>Adults mean age: 23.3 (n = 20)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adults mean age: 22.8 (n = 24)</td>
<td></td>
</tr>
<tr>
<td>Cupchick, Philips, &amp; Hill (2001)</td>
<td>University students (n = 96)</td>
<td></td>
</tr>
<tr>
<td>Ho, Cheung, &amp; Chan (2003)</td>
<td>Males 6 – 15 years (n = 90)</td>
<td>Verbal memory</td>
</tr>
<tr>
<td></td>
<td>College students (n = 33)</td>
<td></td>
</tr>
<tr>
<td>Franklin et al. (2008)</td>
<td>Musicians (n = 12), non-musicians (n = 13)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Musicians (n = 11), non-musicians (n = 9)</td>
<td></td>
</tr>
<tr>
<td>Schellenberg (2004)</td>
<td>6 year old children (n = 144)</td>
<td>General intelligence/IQ</td>
</tr>
<tr>
<td>Schellenberg (2006)</td>
<td>6 - 11 year old children (n = 147)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 – 25 year old undergraduates (n = 150)</td>
<td></td>
</tr>
<tr>
<td>Aleman, Nieuwenstein, Boecker, &amp; Hann (2000)</td>
<td>University students (n = 35)</td>
<td>Mental imagery</td>
</tr>
</tbody>
</table>

While this is not a definitive list of research that has been conducted in regards to music and its effect and influence on other cognitive domains, it indicates how researchers have investigated the potential of music to develop and improve other
cognitive domains. Klopper and Garvis (2011) indicate that it is through research that new knowledge is created that can assist in developing and creating new ways to engage with the Arts and extend its use into other cognitive domains. One domain that has piqued the interest of researchers in the fields of neuroscience and psychology recently is the relationship between music and language, in particular speech, as a result of overlapping elements. This, therefore, supports my research project investigating the use of music to develop specific speaking skills through music.

2.4.2 ELEMENTS OF MUSIC AND SPEECH

Music is considered complex and a multidimensional phenomenon (Thorgersen, 2011). The ways in which we conceptualise music is, to some extent, culture specific (Morrison & Demorest, 2009). Balkwill and Thompson (1999) acknowledge that even though emotional meaning of music is interpreted solely by the enculturation to a specific tonal system, there are indeed universals in music. These can be examined through musical elements. Lakoff and Johnson (2003) define an element as “a concept that emerges directly from our experience with the whole,” thus being a complete musical work or experience (Wiggins 2009, p. 31). The interaction of elements within is an essential quality, and “altering any one of these [elements] will affect the ways the others are perceived” (Wiggins, 2009, p. 31). Flohr and Trollinger (2010) consider the elements of rhythm and pitch to be the two primary building blocks within music. While they may at first appear simple and well-defined, they can combine to produce highly complex and varied patterns (Krumhansl, 2000). Arleo (2000) considered music and speech to be of the same phenomena due to them both possessing common foundational features – that being melody/pitch and rhythm.

While pitch and rhythm have been identified as the foundational elements in music (Dinham, 2011; Flohr & Trollinger, 2010), they are equally important elements
in the act of speech (Hannon, 2009; Lee, Lekich, & Zhang, 2014). Arleo (2000) indicates that what is referred to as rhythm and melody in music is reflected in speech but better known as stress and intonation. Recognising the human voice as an instrument (Gordon, 2007), Cohen et al. (2011) outline that an array of expressions can be produced by the human voice in everyday speech. Combinations of pitch and rhythm are used just as skilfully and purposefully in verbal communications to convey meaning and emotion as they are by musicians (Cohen et al., 2011). Similar to music, they are employed slightly differently according to cultural context; however, are still regarded as necessary for speech.

‘Melody’ has no one single definition. Dinham (2011) defines melody as “a series of musical tones or pitches that creates a tune” (p. 271). Flohr and Trollinger (2010) also define melody, but more precisely as a set of mathematical frequencies that have the tendency to possess some form of linear organisation, more commonly referred to as pitch. ‘Pitch’ indicates how high or low a tone can be in a sound pattern which is determined in a quantitative manner by calculating vibrations per second (Dinham, 2011; Lee, 2000). These elements of music are reflective of the process in which musicians engage, whether it be creating, performing, or listening, and can be considered as both process and product (Wiggins, 2009). To each individual listener, pitch and melody is highly subjective; whether it is pleasing or displeasing, or is of value or holds particular meaning. More aligned with speech, pitch and melody can also be defined as a “succession of notes or sound arranged to form an idea or phrase” (Thain, 2010, p. 410). It is the rising and falling contours within speech that reflect intonation and referred to as the prosodic characteristics of speech as they give meaning to words and phrases.
Dinham (2011) indicates rhythm is a fundamental element of music, in which Flohr and Trollinger (2010) also consider it to be “a primary component of music” (p. 27) in which its presence, or lack thereof, can easily be perceived. Rhythm is the heartbeat of music. Dinham (2011) defines rhythm as “the movement of sound through time – a numeric pattern of beats over time” (p. 271). More specifically, rhythm can be described as the “movement of similar tone groups; that is, the effect produced by the systematic grouping of tones with reference to regularity both in their accentuation and in their succession as equal or unequal in time value” (Baker, Slominsky, & Kuhn, 2001, p193). Each individual perceives a steady beat differently; however, it is an element of music that is innate to all human beings. Rhythm is present within all individuals; it is the “regularly timed, predictable patterns of stressed and unstressed syllables” and referred to as stress when discussing it in the context of speech (Thain, 2010, p. 410). It is these stressed and unstressed patterns that influence the verbal fluency and pronunciation of speech.

The prosodic characteristics of speech are rhythm, stress, and melodic contours or intonation changes that underpin human utterances. Nooteboom (1997) outlines that in normal, everyday speech, pitch is witnessed to fluctuate from high to low tones in a non-random way, consequently providing recognisable melodic properties within speech. Furthermore, the shortening or lengthening of syllables or segments occur in accordance to an underlying pattern – with certain sounds emphasised and made more prominent than others (Nootenboom, 1997). Meaning in language is constructed by the organisation of phonemes into words, and words into sentences, similarly, musical meaning is obtained through the “organisation of tonal patterns within a tonality and rhythm patterns within a meter” (Taggart et al., 2000). It is these dimensions of melody (pitch) and rhythm (stress) that assist in the semantics
of speech and reinforce the musicality of languages, as they all rely on tone and rhythm to varying extents to effectively convey meaning.

Whilst recognising the elements of pitch and rhythm being evident in both music and speech, they are also the teaching and learning focus in Gordon’s Music Learning Theory in order to develop students’ ability to hear sounds in their head, thus being audiation.

2.4.2.1 PITCH, RHYTHM AND GORDON’S MUSIC LEARNING THEORY

Within Gordon’s Music Learning Theory, pitch and melody are referred to as tonal content, in which the subcategories of tonalities and tonal patterns fall. The GIML (2017f) outlines that tonal content is hierarchical; each tonal content level assists in the readiness and progression in reaching the next level. A sense of tonality and vocabulary of tonal patterns facilitate tonal learning. Learning sequence activities see tonal patterns organised according to tonal classification such as major, minor and dorian, as well as tonal pattern function such as tonic, dominant and subdominant. Tonal content is primarily sequenced according to familiarity, giving reason as to why major tonality and the tonic and dominant functions are introduced first as they are most commonly used in, and familiar to, Western culture (GIML, 2017f).

The Gordon Institute for Music Learning (GIML, 2017d) states that within the Music Learning Theory, rhythm patterns are described as being organised “according to meter classification (usual duple, usual triple, unusual, and so on), [as well as] rhythm pattern functions (macrobeats, microbeats, divisions, and so on)” (par. 2). It is reiterated that rhythm learning is facilitated by the development of one’s sense of meter and vocabulary of rhythm patterns. The GIML (2017d) deems the learning of rhythm content hierarchical, as each level “serves as a readiness for achieving the
next higher level of rhythm content” (par. 1). For example, duple is the most common and familiar rhythmic meter within Western culture, and consequently introduced first in learning sequences and classroom activities. Similarly, the GIML (2017d) explains that the rhythmic functions of macrobeats and microbeats are introduced first as they are the most basic rhythmic functions in duple meter.

Gordon’s MLT indicates the importance of both pitch and rhythm, and how learning ought to be scaffolded. It reinforced the appropriateness of drawing upon this theory when designing the music intervention for this research as it is built upon developing one’s tonal and rhythmic ability, both elements evident and necessary for speech. Recognising the musical elements of pitch and rhythm exist in speech, although referred to using different terms, research has been conducted, in the field of neuroscience in particular, to investigate this relationship further and identify approaches that have been used previously to develop speech through music.

2.4.3 MUSIC, THE BRAIN, AND SPEECH

Moreno (2009) states that music and language (in general) are “two of the more complex, uniquely human abilities” (p. 335). More specifically, music and speech are both forms of auditory communication and draw upon common processes Hausen, Torppa, Salmela, Vainio, & Särkämo, 2013; Moreno, 2009; Patel, 2014; Stevens et al., 2013). Both are seen to involve the organisation of “acoustic sequences and engage complex cognitive and motor processes” (Patel & Daniele, 2003, p. 35). Thain (2010) emphasises that it is natural for children, and the brain, to seek patterns when attempting to connect new knowledge to what already exists, and attaching meaning to new experiences; thus being the process identified by Piaget as assimilation and accommodation. Thain (2010) continues by identifying the rich source of patterns that are evident in music. It is here that Curtain and Dahlberg (2004) indicate,
One of the most important points about the brain and learning is the fact that the brain’s search for meaning occurs through patterning. The brain looks for patterns as it organises information according to schematic maps and categories. As the young learners in language classes search for meaning in the experiences we provide for them, we must be sure to create complex, meaningful experiences from which they construct their own patterns of understanding. (p. 7).

Not only does patterning occur within the brain and in the construction of music and musical ideas, it also exists in the melodic and rhythmic patterns of speech. Consequently, the patterning and shared elements of pitch/melody and rhythm that occur between music, speech, and the brain encourages the continued investigation into the relationship between music and speech through Gordon’s Music Learning Theory.

It has been concluded by language researchers that a symbiotic relationship does exist between speech and music in regards to their underlying principles and mental processing (Salcedo, 2010). Further studies corroborate that there are common influences to “the perception of both speech and musical pitch [that] exists in individuals” (Deutsch, 1992, p. 88). Bangert et al. (2006) conducted a study on the brains of musicians and non-musicians, in which results concluded that music and language are inextricably linked, as areas of the brain associated with language processing demonstrated stronger activation levels in the brains of musicians than non-musicians. From the examination of the speech and music of specific cultures, it can be suggested that there is a strong correspondence “between the tonal melody of spoken words and the musical melody of those words in song” – the prosodic
similarities (Schellenberg, 2009, p. 137). It is these prosodic characteristics that are both evident in speech and music, and assist in meaning making.

Jackendoff and Lerdahl (1982) are considered two of the earliest theorists to investigate the interconnectedness of music and language, in particular the comparison of syntax and prosody. A study by Thompson et al. (2004) explored the notion of prosody in which results evidenced the potential music-language connection. Participants were presented with “neutral utterances spoken with emotional (i.e., happy, sad, fearful or angry) prosody, or tone sequences that mimicked the utterances’ prosody” (p. 46), in which the adult musicians outperformed the adult non-musicians in the identification of emotion. Additionally, this study explored the effects of one year of keyboard, vocal, drama, or no specific instruction on six-year old children (n = 43). The results from this study support the hypothesis that “training in music enhances sensitivity to emotions conveyed by prosody,” thus further demonstrating the “complex association between musical training and the ability to decode speech prosody” (Thompson et al., 2004, p. 59).

Magne, Schon, and Besson (2006) tested their hypothesis with eight-year old children that through musical training, pitch processing in both music and language can be facilitated. Their hypothesis was proved correct as musician children performed twice as high than their non-musician peer participants when detecting weak incongruities in both music and language. Magne et al. (2006) concluded that there are common pitch processing mechanisms in the perception of music and language, in which music training “seems to exert specific beneficial influences” on the perception of both music and language (p. 204). Considering the positive influence of musical experience on pitch detection, investigations into the development of speech prosody have been conducted.
A number of studies (Magne et al., 2006; Samuelsson, 2011; Thompson et al., 2004) have explored the relationship of prosody-melody, in which musical training and expertise enhances pitch detection in both music and speech is continually hypothesised. More recently, Samuelsson (2011) investigated the effects of prosodic intervention on a four-and-a-half-year-old Swedish boy who presented with prosodic difficulties. As a tonal language, Swedish can be seen as complex and complicated prosodic system. The main focus of this experiment was on word prosody, in which exercises within the intervention primarily included imitation and repetition of rhythmic and tonal patterns. Although analysis of the boy’s spontaneous speech showed an improvement in his prosodic skills following intervention, this improvement was not statistically significant. Although this particular study focussed on rhythmic and tonal patterns, music was not the instructional medium used to uncover a potential relationship between music and speech.

A two year longitudinal study was conducted by François, Chobert, Besson and Schön (2013) on eight-year old children to investigate the effect of music training specifically on speech segmentation. Participants were pseudo-randomly assigned to one of two groups: music training or painting training. Pre-test results indicate that there were no significant differences between the groups. However, only the children who were assigned to the music training group demonstrated improvements in their speech segmentation skills. These results suggest that two years of music training directly facilitated the improvements to speech segmentation, and thus reinforces the importance of music in developing speech perception. This study (François et al., 2013) further encouraged my research to be conducted, as it demonstrated how music can influence the development of another cognitive domain (speech), which was also investigated in my research.
While some studies have conducted research that provides results in regards to the positive transfer effects of music on pitch processing in language over extensive periods of time (Rauscher et al., 1997; Scellenberg, 2004), Moreno and Besson (2006) have recently highlighted that eight weeks of musical training can positively influence, to some extent, the brain processing involved in language. Moreno and Besson (2006) provided an eight-week intervention to 20 non-musician French children in order to investigate if the musical training would help with detecting pitch changes in language, using 72 spoken declarative sentences from children’s books. The musical training employed was based on technology referred to as ‘The Musical Garden’ whereby pads of differing colours are placed on the floor and connected to a computer. Depending on the particular software in use, different sounds are produced when children walk on the different pads, in which the sounds for Moreno and Besson’s (2006) experiment were limited to flute, piano, contrabass, and violin. Of these 20 children, 10 were assigned to receive music training for eight weeks, with the other 10 received painting training. The children in each group participated in their assigned activity twice a week for 40 minutes each. Results showed that there were “significantly more errors to weak incongruities than to strong incongruities and congruous endings” as children had the tendency to categorise both weak incongruities and congruous endings as congruous (Moreno & Besson, 2006, p. 289). Although there was an increase in the detection of strong incongruities when pitch changes in language were large, it was found that when there was congruency, there appeared to be a “decrease in the amplitude of late positive components” only by the children who received the eight weeks of musical training (Moreno & Besson, 2006, p. 290). Although it can be implied that the eight weeks of music training were not enough to influence pitch detection in regards to incongruities, such relative short exposure was still enough for the brain processing
involved in language to be modified (Moreno & Besson, 2006). Recognising the impact
music had on students' brains after only eight-weeks of the intervention twice a week
for 40 minutes, amassing to 53 hours, it informed the duration of this study’s
intervention as it too was conducted over eight weeks, but was delivered three times
a week for 30 minutes each, amassing to 60 hours of participation in the intervention.
Consequently, the research conducted by Moreno and Besson (2006) informed this
research as less exposure to music evidenced positive changes to students’ pitch
detection skills, therefore, highlighting the potential for this research to produce similar
or greater results.

Building upon this line of research and using a similar methodology, Moreno, et
al. (2009) conducted a longitudinal study with 32 non-musician Portuguese children
over a nine-month period. Children were pseudo randomly assigned to either six
months (24 weeks) of music or painting training twice a week for 40 minutes each.
From this research, it was discovered that the children who received the music training
demonstrated “enhanced reading and pitch discrimination abilities in speech” (Moreno
et al., 2009, p. 712). Consequently, results from both studies (Moreno & Besson, 2006;
Moreno et al., 2009), indicate the “positive transfer from music to speech” as a result
of music training (Moreno et al., 2009, p. 712).

While these studies highlight connections between music training and the
development of prosody and pitch processing, none of them had applied Gordon’s
Music Learning Theory, known for specifically developing tonal and rhythmic
elements, as the musical method in attempt to develop the spoken language ability of
their participants. Consequently, this outlines the level of originality of this research as
Gordon’s Music Learning Theory is being used with the aim of developing verbal
fluency, prosody, and pronunciation in its participants with English as an additional
language or dialect.

Having defined and recognised pitch and rhythm in respect to music, speech
and Gordon’s Music Learning Theory, evidence of these elements can be better
discussed through the idea of tonal and atonal languages, as it effectively
demonstrates the musicality of spoken languages throughout the world, reinforcing the
connection identified between music and speech.

2.4.4 TONAL AND ATONAL LANGUAGES
It has been proposed that the correlation of song melody and speech tone in tonal
languages is so high that “it can generally be expressed in terms of rules” (Devine &
Stephens, 1994, p. 162). Like music, language comes to exist through the “infinite
combinations of a discrete set of sounds, [in which] every culture chooses its own
combinations of phonemes out of all the possibilities that can possibly be produced”
(Vonderhoff, 2009, p. 11). Studies (Maddieson, 2013; Lewis, 2009) have shown that
contour tones exist in languages throughout the world. However, a significant
proportion of these tonal languages exist in East and Southeast Asia, and larger
proportions of the African continent.

Mandarin and Cantonese are said to be textbook cases of true tonal language,
as Vonderhoff (2009) highlights “the melodic contour that makes a semantic
difference,” resulting in the listener hearing a different meaning (p. 17). It is estimated
that 60 – 70% of all the languages throughout the world are tonal, and Han,
Sundararajan, Bowling, Lake, and Purves (2011) outline that the tonal characteristics
evident within the music of a specific culture are seen to be “related to the prosodic
characteristics of its speech” (p. 1). Of the 526 global languages studied by Maddieson
(2013), it was discovered that of the 63 out of the 68 languages sampled from the Niger-Congo region were tonal and amassed to approximately 92%. Additionally, *Xhosa* San, a Southern African tonal language previously known as Hottentot, is known to distinguish words by using six types of tonal contrasts (Malmberg, 1963). Yip (2002) states that with these tonal languages, it is not only the nuance of the word is changed as a result of prosodic characteristics, but the word’s core meaning.

Studies using tonal languages involving Western African songs (Richards, 1972) and with contemporary Cantonese songs from the 1990s (Wong & Diehl, 2002), exemplified that there is resemblance between spoken and sung melodies of text — a connection between music and lexical melodies. In addition to melody highlighting a significant relationship between music and speech, Wee (2007) discovered that rhythm — another vital component of both music and speech — plays an important role in emphasising this connection. In his study, it was found that the melody of speech and the melody of music corresponded in elements of metrical prominence; indicating that the matching of melody and lexical tone were evident in those syllables uttered on the most prominent beats within a bar.

Maddieson (2013) outlines that the musical and prosodic elements of pitch and rhythm are not as prominent in some languages throughout the world, as the pitch and melodic contour do not necessarily change the core meaning of a word. From Maddieson’s (2013) study of the 526 global languages, such languages without a tone are deemed atonal, and seen to dominate the Western regions of the Eurasian landmass, including South Asia, southerly regions of South American, coastal areas of North-western north American, and Australia. Instead of varying the pitch contour within individual syllables or words, Mang (2001) outlines that speakers of a non-tonal language use “pitch contour over a sentence to convey intentions and expressions”
(p. 5). Samuelsson (2011) highlights that prosodic characteristics are relevant and vital in understanding the information conveyed through speech, and it is the ‘sing-song’ nature and quality of tonal languages that suggest music and speech are more interconnected than one assumes.

A study conducted by Patel and Daniele (2003) investigated whether the music of a specific culture reflects its linguistic prosody, in particular rhythm, tempo, and fluidity. The language and classical music from Britain and France was used due to determine the significant differences in their language rhythms. Patel and Daniele (2003) discovered that the rhythm in musical themes of each culture is reflected in the rhythm of their spoken languages; highlighting that language and music has a culturally specific connection.

The characteristics and processes involved in the music and language of a culture are closely connected. As Lowey (1995) outlines, it is the music of speech that is “the earliest dimension of language that is used and understood by children” (p. 61). Affirming the notion of oracy, children are witnessed to pay close attention to the subtle variations in tone and timing, enabling them to flawlessly learn their mother language (Stansell, 2005). Discussed previously (pp. 65-68 of this thesis), the elements of melody (pitch) and rhythm are expected to assist in defining music; however, they are equally important in the act of speech, more specifically prosody. It is this connection between the prosodic characteristics of a culture’s music and speech that suggest the use of a Western music intervention drawing upon principles of audiation from Gordon’s Music Learning Theory will assist in the acquisition of and the capacity to verbally communicate in the English language. These musical elements are vital for communication in tonal languages, and the intervention in this study provided me with the opportunity to individually assess the prosody of participants with a tonal or atonal
mother tongue when acquiring the English language, and compare and contrast the results. As English is Australia’s dominant language and where this study was conducted, students learning English as an additional language or dialect (EAL/D) were approached to further establish the music-speech connection.

2.5 EDUCATION OF INTERNATIONAL STUDENTS IN AUSTRALIA

2.5.1 STUDENTS WITH EAL/D

A variety of terms have been used over time to define students for whom English is not their first or native language or dialect. For these students, they can be referred to as English as a Foreign Language (EFL), English as a Second Language (ESL), or English as an Additional Language or Dialect (EAL/D). While their use may appear to be interchangeable, fundamental differences do exist between each of the three terms (ESL, EFL, EAL/D).

Students are referred to as EFL if they are learning the English language in a country where it is not the native or dominant language of that country and therefore not used in daily communications (Skutnabb-Kangas, 1981). For these learners, they are not expected to use English, and are thus discharged of any obligation to its use upon leaving the language learning classroom (Kover, 2009). In addition to EFL, students can also be referred to as English as a second language (ESL). Students are recognised as ESL if they are learning the English language but also living in a country where English is the native language in which they are and are expected to communicate through it as a part of their daily environment and interactions (Bell; 2011; Skutnabb-Kangas, 1981). Students with ESL differ from those identified as EFL as they are not only learning the English language, but are provided with far more
opportunities to use and engage with the language due to extensive daily exposure to it as a result of it being the native language of that particular country (Bell, 2011). English as an additional language of dialect (EAL/D) is another term used to describe those who do not have English as their native language. This term is considered more inclusive than ESL as it acknowledges that students may be learning English not necessarily as a second language but as a third or more. Students with EAL/D are viewed as having access to more than one language or dialect on a regular basis (Milton Keynes Council, 2004). When referring to students who have a first (or native) language or dialect that is not Standard Australian English, Australia, and Queensland in particular, use the acronym EAL/D (de Courcy, Dooley, Jackson, Miller, & Rushton, 2012; Department of Education and Training [DET], 2016b). For the purpose of this study, the term used and participants involved have, and are referred to as, students with English as an additional language or dialect (EAL/D). Furthermore, in the Australian context, the term ‘English’ refers to Standard Australian English (SAE).

The Australian Curriculum, Assessment and Reporting Authority (ACARA, 2014b) defines students with EAL/D as “those whose first language is a language or dialect other than English and who require additional support to assist them to develop proficiency in English” (p. 6). ACARA (2012) details that the groups that form learners with EAL/D include:

1. “Overseas- or Australian-born students whose first language [or dialect] is a language other than English;
2. Aboriginal and Torres Strait Islander students whose first language is an Indigenous language, including traditional languages, creoles and related varieties, or Aboriginal English” (pp. 6-7).
However, for the purpose of this thesis, the group that was targeted for participation was recently arrived immigrants and refugees to Australia.

Whilst it is important that students with EAL/D may require language support, it is acknowledged that not all students will require such support in order to meet the specific curriculum, assessment and reporting requirements and expectations (ACARA, 2012). de Courcy et al. (2012) explain that students with EAL/D come to school with “diverse educational, linguistic and literacy backgrounds” (p. 2). Consequently, their experiences with and exposure to the English language may vary from formal schooling in their home country where English was learned as a foreign language (EFL), to no schooling and/or severely disrupted educational experiences. The diversity of students with English as an additional language or dialect is reflected in the ACARA (2014b) regarding the diversity of students with EAL/D entering Australian classrooms, as they may have:

- schooling that is equivalent to their same-age peers in Australia;
- limited or no previous education;
- little or no experience in their first language (or any language);
- excellent literacy skills in their first language (or other language);
- learned English as a foreign language and had some exposure to written English but need to develop oral English;
- already learned one or more languages or dialects other than English; [and/or]
- good academic skills but struggle with the social registers of English (ACARA, 2014b).

These inclusions for students with EAL/D in the Australian Curriculum reinforce the importance to develop programs and interventions to assist such students in their
English proficiency. It can be suggested that the specific recognition of students with EAL/D in ACARA is due to the continued increase in immigrants arriving to Australia and thus our schools. While recent statistics evidence this increase, they also emphasise the importance to assist these students with their English language learning as they originate from countries where English is not the native language.

2.5.2 AUSTRALIAN IMMIGRATION STATISTICS

The mandate to assist students with EAL/D increases annually as a result of the continued growth in Australia’s immigration rates. Australia has frequently been referred to as a country that is both culturally and linguistically diverse, in which de Courcy et al. (2012) highlight that Australia “comprises [of] people from over 2,000 different ethnic backgrounds” (p. 2). The need to assist in the English language development of students with English as an additional language or dialect is increasing due to the continued rise in Australia’s immigration rates over the last two decades (United Nations, Department of Economic and Social Affairs, Population Division, 2013). Furthermore, this need is of importance as they are now living in a country whereby English is the native language, and they should possess the ability to effectively converse in English so they can participate in a variety of contexts – academic, occupational, and social.

The need to assist the English language development of students with EAL/D is one of importance within today’s Australian society. Recent statistics from the MPI (2015) indicate that immigration figures have continued to steadily increase since 1960 (Table 4).
Table 4


<table>
<thead>
<tr>
<th>Year</th>
<th>Total Population</th>
<th>International Migrant Population</th>
<th>Migrant share of total population (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>10,276,000</td>
<td>1,698,000</td>
<td>16.5%</td>
</tr>
<tr>
<td>1970</td>
<td>12,728,000</td>
<td>2,457,000</td>
<td>19.3%</td>
</tr>
<tr>
<td>1980</td>
<td>14,695,000</td>
<td>2,896,000</td>
<td>19.7%</td>
</tr>
<tr>
<td>1990</td>
<td>17,097,000</td>
<td>3,955,000</td>
<td>23.1%</td>
</tr>
<tr>
<td>2000</td>
<td>19,107,000</td>
<td>4,386,000</td>
<td>23.0%</td>
</tr>
<tr>
<td>2010</td>
<td>22,163,000</td>
<td>5,883,000</td>
<td>26.5%</td>
</tr>
<tr>
<td>2015</td>
<td>23,969,000</td>
<td>6,764,000</td>
<td>28.2%</td>
</tr>
</tbody>
</table>

Source: Migration Policy Institute tabulation of data from the United Nations, Department of Economic and Social Affairs (2015).

Table 4 highlights the significant increase of immigrants to Australia from 1960 to 2015. As Australia’s total population continues to grow, so too does the international migrant population. The migrant share of the total population supports these figures, with only a slight decrease in percentage from 1990 (23.1%) to 2000 (23.0%). However, this significantly increased from the year 2000 to 2010, evidencing the greatest increase in percentage, that being a 3.5% increase from 23.0% to 26.5%. By 1990, over one-fifth of Australia’s population were migrants, in which two decades later evidenced over one-quarter of the country’s total population being migrants. From 2000 – 2010, the total Australian population had increased by 3,056,000, and the international migrant population of Australia raised by 1,497,000. When examining these statistics, it can be deduced that in the space of 10 years, almost half (49%) of Australia’s total population increase was due to the number of increased international migrants. Similarly, from 2010 – 2015, the Australian population increased by 1,806,000, with the international migrant population too evidencing an increase of 881,000. Again, in the space of five years, just under half (48.8%) of Australia’s population growth is as a result of international migrants.
When country of origin for the immigrant is considered, data captures over 54% of migrants arrive from a non-English speaking country (ABS, 2017). As of June 2016, the Australian Bureau of Statistics (ABS, 2017) provided statistics that categorised immigrants upon their country of birth and compiled a list of Australia’s top ten sending countries and their percentage in relation to Australia’s total population (Table 5).

Table 5
Australia’s top ten sending countries by country of birth – June 2016

<table>
<thead>
<tr>
<th>Country of Origin</th>
<th>Number</th>
<th>% of Australian population</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK, Channel Islands and Isle of Man</td>
<td>1,198,000</td>
<td>5.0</td>
</tr>
<tr>
<td>New Zealand</td>
<td>607,200</td>
<td>2.5</td>
</tr>
<tr>
<td>China (excl. SARs and Taiwan)</td>
<td>526,000</td>
<td>2.2</td>
</tr>
<tr>
<td>India</td>
<td>468,800</td>
<td>1.9</td>
</tr>
<tr>
<td>Philippines</td>
<td>246,400</td>
<td>1.0</td>
</tr>
<tr>
<td>Vietnam</td>
<td>236,700</td>
<td>1.0</td>
</tr>
<tr>
<td>Italy</td>
<td>194,900</td>
<td>0.8</td>
</tr>
<tr>
<td>South Africa</td>
<td>181,400</td>
<td>0.8</td>
</tr>
<tr>
<td>Malaysia</td>
<td>166,200</td>
<td>0.7</td>
</tr>
<tr>
<td>Germany</td>
<td>124,300</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Source: Australia Bureau of Statistics (2017)

From this data, the United Kingdom and New Zealand ranked first and second respectively, amassing to 1,818,400 people. From the remaining data presented in Table 5, the other eight countries are recognised as having a language other than English as their mother tongue. From the 3,858,800 recorded immigrants from the top ten sending countries in 2015, the total immigrant population from non-English speaking countries totalled 2,040,400, equalling 52.87% of immigrants from the top ten sending countries.

As this study focuses on students from a non-English speaking background within schools, it is important to gain an understanding of the number of students who have English as an additional language within Australia. The report by the Australian Government Department of Immigration and Border Protection (2012) provides
statistics (2005 – 2012) in regards to the Net Overseas Migration (NOM) of school students who have arrived to Australia (Table 6).

Table 6

**NOM Student-Schools arrivals – annual historical series – top 10 citizenship countries**

<table>
<thead>
<tr>
<th>Citizenship Country</th>
<th>Year Ending (June)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>China (excl. SARs)</td>
<td>3,751</td>
</tr>
<tr>
<td>Vietnam</td>
<td>321</td>
</tr>
<tr>
<td>Hong Kong SAR</td>
<td>395</td>
</tr>
<tr>
<td>South Korea</td>
<td>641</td>
</tr>
<tr>
<td>Malaysia</td>
<td>210</td>
</tr>
<tr>
<td>Japan</td>
<td>229</td>
</tr>
<tr>
<td>Thailand</td>
<td>23</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>133</td>
</tr>
<tr>
<td>Indonesia</td>
<td>144</td>
</tr>
<tr>
<td>Cambodia</td>
<td>8</td>
</tr>
</tbody>
</table>


The data presented in Table 6 outlines that of the net overseas migration of students who are placed in Australian schools as of June 2012, the top ten sending countries are all from non-English speaking backgrounds. To support this data, the United Nations, Department of Economic and Social Affairs, Population Division (2013) have provided statistics which highlight the increase in primary to junior secondary school aged children within Australia from 1990 – 2013 inclusive (Table 7).

Table 7

**Australia’s migrant stock at mid-year by age for 1990, 2000, 2010 and 2013**

<table>
<thead>
<tr>
<th>Year</th>
<th>0-4 years</th>
<th>5-9 years</th>
<th>10-14 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>83,605</td>
<td>107,844</td>
<td>156,830</td>
</tr>
<tr>
<td>2000</td>
<td>94,666</td>
<td>90,552</td>
<td>124,525</td>
</tr>
<tr>
<td>2010</td>
<td>154,818</td>
<td>141,742</td>
<td>152,091</td>
</tr>
<tr>
<td>2013</td>
<td>184,549</td>
<td>165,688</td>
<td>170,984</td>
</tr>
</tbody>
</table>

Source: Adapted from the United Nations, Department of Economic and Social Affairs, Population Division (2013).
Closer examination of these statistics reveal the number of immigrants from non-English speaking countries is continuing to rise in Australia, especially primary school aged children. Consequently, there is a need for increased attention around the educational pedagogical practices that are monitored and tailored to the individual needs of students with EAL/D to assist in the development and acquisition of the English language, and their participation within the classroom and wider Australian community.

Recent data from the Australian Government Department of Education and Training (Commonwealth of Australia, 2016) denotes Australia hosts 712,884 international students as of December 2016, evidencing an increase of 10.5% within a 12-month period. Of this total international student group, just fewer than 28% are from China. When analysing the data by sector, the Commonwealth of Australia (2016) outline that 23,325 international students were enrolled in Australian schools just for the month of December 2016. Furthermore, the top three nationalities of these international student enrolments in Australian schools for December 2016 are China (12,086), Vietnam (2,193), and South Korea (1,276) (Commonwealth of Australia, 2016). These recent statistics indicate that the international students from top three nationalities enrolled in Australian schools for the month of December 2016 do not have English as their first language. Consequently, this reinforces the need to target and assist in the development of the English language for students with English as an additional language or dialect.

The Commonwealth of Australia (2016) recently provided data that outlined the top 10 nationalities of international student enrolments in Australian schools, as well as other nationalities (Table 8).
Table 8

School sector enrolments by top 10 nationalities for December 2016 (Australia)

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>12,086</td>
</tr>
<tr>
<td>Vietnam</td>
<td>2,193</td>
</tr>
<tr>
<td>Korea, Republic of (South)</td>
<td>1,276</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>1,082</td>
</tr>
<tr>
<td>Germany</td>
<td>940</td>
</tr>
<tr>
<td>Japan</td>
<td>784</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>518</td>
</tr>
<tr>
<td>Italy</td>
<td>434</td>
</tr>
<tr>
<td>Malaysia</td>
<td>425</td>
</tr>
<tr>
<td>Thailand</td>
<td>420</td>
</tr>
<tr>
<td>Other nationalities</td>
<td>3,167</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23,325</strong></td>
</tr>
</tbody>
</table>

Source: Adapted from Commonwealth of Australia (2016, p. 7).

The data in Table 8 reveals that of the top 10 nationalities of international students enrolled in Australian school, not one is a country that has English as its first or native language. Therefore, these statistics highlight the need to ensure the development of English for students with English as an additional language or dialect.

This research was conducted in the Australian state of Queensland, so more specific data was sourced to emphasise the diversity of international students enrolled in Queensland state schools and the substantial number of them. The Australian Education International (Commonwealth of Australia, 2012) outlined that of the 20,868 international students enrolled in schools across the country in 2011, in which it was recorded that Queensland hosted 4,388 international students. Recent statistics from the Commonwealth of Australia (2016) illustrate that of the total 23,325 international students enrolled in schools around the country for December 2016, in which 4,987 are schooled in the state of Queensland. Table 9 provides more detailed information regarding the breakdown of the international student nationalities in Queensland schools.
Of the top 10 nationalities outlined in Table 9, the international students within Queensland schools originate from a country where English is not the official or native language of that country. This underscores the need to assist the development of the English language for students with EAL/D so that they eventually demonstrate the ability to participate in contexts outside of the academic school environment.

Past and recent statistics provided by the Australian government have demonstrated that the number of immigrants arriving in Australia has continued to increase over the years. From the recent statistics provided by the Commonwealth of Australia, (2016), it can be seen that an increasing number of students are arriving in Australia whereby English is not their native language. Consequently, these statistics support this study’s aim to assist students with English as an additional language or dialect so that they are not only able to participate in academic contexts and meet curriculum requirements and demands, but also social and, eventually, occupational contexts. In order to support students with EAL/D, their learning needs ought to be considered so as to provide effective teaching and learning opportunities for them. Due to students having a native language or dialect other than English, it cannot be

### Table 9

**Total school sector enrolments by top 10 nationalities for December 2016 (Queensland)**

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>1,287</td>
</tr>
<tr>
<td>Vietnam</td>
<td>152</td>
</tr>
<tr>
<td>Korea, Republic of (South)</td>
<td>423</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>307</td>
</tr>
<tr>
<td>Germany</td>
<td>600</td>
</tr>
<tr>
<td>Japan</td>
<td>345</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>461</td>
</tr>
<tr>
<td>Italy</td>
<td>294</td>
</tr>
<tr>
<td>Malaysia</td>
<td>57</td>
</tr>
<tr>
<td>Thailand</td>
<td>48</td>
</tr>
<tr>
<td>Other nationalities</td>
<td>1,013</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,987</strong></td>
</tr>
</tbody>
</table>

Source: Adapted from Commonwealth of Australia (2016, p. 7).
guaranteed that students will speak English when they are at home or in familial environments. It can be implied that the significant learning of the English language occurs within the school environment. Consequently, the creation of additional practices that specifically focus on the development of students’ English skills should occur so as to provide both teachers of students with EAL/D and generalist classroom teachers with an approach and potential resources to draw upon. Through this, students will develop their English-speaking proficiency where they can better meet the requirements stipulated in the Australian Curriculum (ACARA, 2012), and participate and engage within the broader Australian community. However, in order to do so, the individuality of students with EAL/D needs to be recognised, as there are certain characteristics and pathways that are typical of learning English as an additional language or dialect, but to varying degrees.

2.5.3 LEARNING NEEDS OF STUDENTS WITH EAL/D

Children of immigrant families are often seen to have great difficulty with second language learning (Patscheke, Degé, & Schwarzer, 2016). To support teachers in providing effective teaching and learning to students with EAL/D, resources have been developed to help understand the characteristics and pathways that these students progress through (ACARA, 2014a; 2014b; 2015a). To assess students’ needs, teachers also need to map and assess where they are at using EAL/D Learning Progression provided by ACARA (2015a) and/or EAL/D Bandscales provided by the Education Queensland (2017). The English as an Additional Language or Dialect Teacher Resource acknowledges that one of the biggest challenges for students learning English as an additional language or dialect is that “they need to concurrently learn English, learn through (or in) English and learn about English” (ACARA, 2014b, p. 9). It is outlined by ACARA (2014b) that students with EAL/D:
• must learn how to use English to communicate successfully and interact formally and informally;
• require considerable exposure to English in order to acquire conversational fluency; and
• may take significantly more time to achieve standards of conversational fluency and academic language proficiency in English (p. 9).

Whether students have been recently exposed to the English language or have been learning English as a foreign language in their home country, they are all still learning new content and skills through “the medium of their new [or additional] language or dialect,” or Standard Australian English, and may require support accessing the curriculum (ACARA, 2014b, p. 9). Furthermore, students are learning to transfer certain concepts, skills, processes, and understandings from their native (or first) language to English. ACARA (2014b, p. 14) states that “competency with spoken language is a crucial prerequisite of learning,” and recognises that those students with EAL/D in Australian schools and classrooms will demonstrate varying levels of proficiency in this area.

The Australian Early Development Index (AEDI) (Australian Government, 2016) is a government initiative that assesses childhood development in their first year of schooling – whether English is their native language or not. The data collected assists in understanding and evaluating the effectiveness of policies and practices so they can be refined to better support young children. There are five domains assessed: physical health and wellbeing; social competence; emotional maturity; language and cognitive skills; and communication skills and general knowledge. Within each, student results would place them in one of three categories: developmentally on track, developmentally at risk, or developmentally vulnerable. Of relevance to this research
are elements within the domain of communication skills and general knowledge, as it reports on students’ verbal communication skills. Table 10 provides the most statistics regarding the developmental level of students’ communication skills and general knowledge, and are categorised according to English-speaking and those with a language background other than English (LBOTE).

Table 10

*Communication skills and general knowledge domain results (2015)*

<table>
<thead>
<tr>
<th>Sub-category</th>
<th>Number of children</th>
<th>On-track (%)</th>
<th>At risk (%)</th>
<th>Vulnerable (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>286,913</td>
<td>76.3</td>
<td>15.1</td>
<td>8.5</td>
</tr>
<tr>
<td>LBOTE – total</td>
<td>62,063</td>
<td>64.1</td>
<td>19.6</td>
<td>16.2</td>
</tr>
<tr>
<td>English only - total</td>
<td>224,850</td>
<td>79.7</td>
<td>13.9</td>
<td>6.4</td>
</tr>
</tbody>
</table>

Source: Adapted from Australian Government (2016, p. 30).

These statistics (Table 10) show that when compared to English-only speaking students, those with a language background other than English were half as likely to be developmentally at risk, and “more than twice as likely to be developmentally vulnerable on this domain” (Australian Government, 2016, p. 29). With regards to communication skills within this domain, the ‘Developmentally Vulnerable’ label stipulates that students will:

- have poor communication skills;
- poor articulation;
- limited command of the English language;
- find it challenging talking to others; and
- have difficulty understanding and being understood (Australian Government, 2016).
Consequently, these statistics (Australian Government, 2016) support the need to continue developing students' oracy levels so they are not developmentally vulnerable and are able to actively participate in a variety of English-speaking contexts.

Recognising the need to target oracy skills for students with EAL/D, it is important to examine characteristics they are expected to present with in regards to their proficiency in spoken English in order to understand challenges they may face when learning the English language so teachers can assist in helping them meet curriculum requirements and reach native-like proficiency in spoken English.

2.5.4 SPEECH CHARACTERISTICS OF STUDENTS WITH EAL/D

Students with EAL/D “come from many linguistic and cultural backgrounds” which will influence the way these students learn to speak English (British Columbia Ministry of Education Special Programs Branch, 1999, p. 9). Although it is impossible to provide a stereotypical description of these students’ speech and language skills and competencies, studies suggest that certain characteristics are evident in the speech of a person with EAL/D that may affect meaning and the way it is received by a native listener (Brown, 2001; Celce-Murcia, Brinton, & Goodwin, 1996). These include pronunciation (i.e. the way the English words or sounds are articulated, especially if that sound is used in a person’s native language), stress assignment (in multisyllabic words), disfluent speech (including filled pauses or repetitions), and native accent of the speaker (Derwing, Thomson, & Munro, 2006; Hahn, 2004).

Hopp and Schmid (2013) discuss that second language acquisition in relation to participant age, and identified that “pronunciation accuracy in the target language is one of the most difficult skills to acquire for late learners” (p. 362). Findings have indicated that negative correlations exist between age of acquisition (AOA) and foreign
accent ratings, in which AOA is now considered a primary indicator for the accuracy of pronunciation in second language acquisition (Hopp & Schmid, 2013). It is recognised that those learning a second language who are at an AOA below puberty may not achieve accent ratings within a native language range due to other influencing factors (MacKay, Flege, & Imai, 2006; Piske, MacKay, & Fledge, 2001). In contrast, it is outlined that if taken place at the age of 10, children may become completely ‘nativelike’ in the speech production of the selected second language if they completely halt their first language input and become fully immersed in the second (Hyltenstam, Bylund, Abrahamsson, & Park, 2009; Pallier et al., 2003; Ventureyra, 2005; Ventureyra, Pallier, & Yoo, 2004). My research involved primary school students with English as an additional language or dialect between the ages of six and eight. It was hypothesised that given their age of acquisition in regards to additional language learning, students would demonstrate some improvement in their English pronunciation accuracy but not to native like proficiency given the intervention period of eight weeks. It was also recognised that complete first language input may not cease which could influence the extent of their pronunciation development and accuracy.

Oral language takes many different forms, such as conversation, storytelling, explanations, and persuasive arguments (ACARA, 2014b). For each to be performed successfully in English, verbal fluency, prosody and pronunciation in the language are required and are considered skills required for oracy (University of Cambridge, 2014c). Recognising that students with EAL/D may find pronunciation, fluency, and prosody challenging when speaking, it reinforced the decision for this research to focus on developing such skills through the use of music as a result of similar neurological processes and the shared elements of pitch and rhythm previously discussed.
2.6 ORACY

2.6.1 WHAT IS ORACY?

The term ‘oracy’ is defined by the ORACY Australia Association Inc. (2016) as “[the] general ability in the skills of speaking and listening” (par. 2). University of Cambridge (2014c) define oracy in their Oracy Skills Framework by outlining four key components of the spoken language that form the notion of oracy: (a) physical; (b) linguistic; (c) cognitive; and (d) social and emotional. Within each of the four components, a number of specific skills are identified that are required for oracy (University of Cambridge, 2014c). Each of the four components can be broken down into specifics that are required:

- **Physical** – voice and body language;
- **Linguistic** – vocabulary, language variety, structure, and rhetorical techniques;
- **Cognitive** – content, clarifying and summarising, self-regulation, reasoning, and audience awareness; and
- **Social and Emotional** – working with others, listening and responding, and confidence in speaking.

This research primarily focused on the ‘physical’ component of this Oracy Skills Framework (University of Cambridge, 2014c), with particular attention being paid to the ‘voice’ sub-strand encompassing: (a) fluency and pace of speech; (b) tonal variation; (c) clarity of pronunciation; and (d) voice projection. The skills of fluency, pace of speech, tonal variation, and clarity of pronunciation are of importance to this research as they are reflected in music in regards to tone (pitch) and rhythm (stress). Even though oracy comprises four components, it must be noted that these cannot be considered to be completely independent, and that a degree of overlap between them...
is inevitable. These oracy skills are evident in all spoken languages as they assist with meaning making.

2.6.2 THE IMPORTANCE OF ORACY

Kirkland and Patterson (2005) state, “the development of oral language is crucial to a child’s literacy development, encompassing listening, speaking, reading and writing” (p. 391). The development of one’s oral language skills is not only required for academic purposes, but is essential within occupational and social contexts. Hartshome (2011) supports this by stating, “good communication skills continue to be the foundations of learning, emotional development and socialising throughout a young person’s schooling and onward into the workplace” (p. 3). The University of Cambridge (2014b) argues further for the increased need to assist the development of young peoples’ ability to use the spoken language effectively, not only for occupational reasons, but also for full participation in the negotiation and maintenance of their human rights, and for life in general. Alexander (2012) outlines the range of purposes for which ‘talk’ can be used, and further highlights its importance by arguing that,

students need, for both learning and life, not only to be able to provide relevant and focused answers but also learn how to pose their own questions and how to use talk to narrate, explain, speculate, imagine, hypothesise, explore, evaluate, discuss, argue, reason and justify. (p. 4).

The correlation between quality classroom talk and achievement in other subject areas has been argued by Alexander (2012), and studies by Rivard and Straw (2000) and Kutnick and Berdondini (2009) provided evidence of this in the areas of scientific understanding and mathematics respectively. Whilst oracy is recognised as
an important skill that transfers to other academic areas, specific oracy skills ought to be appropriately developed within a target language first.

### 2.6.3 ORACY FOR STUDENTS WITH EAL/D

Huang (2010) outlines that the development of oracy in the English language has taken an important position in communication today, and its development is not only vital for native English speakers, but in particular those who have English as an additional language or dialect (EAL/D). Learning English as an additional language or dialect may be a choice for some; however, the ability to verbally communicate in the English language for those students arriving in Australia is deemed a necessity for daily survival, compulsory education, and future occupations (Ortega, 2009). Oracy is of great importance to learners with EAL/D, and previous studies have highlighted the fact that students with EAL/D are graduating from high school without the ability to effectively engage in verbal communication with foreigners – English native speakers. Consequently, it is important that these students demonstrate their ability of wielding the English language for verbal communication purposes so they can be an active participant in academic and social contexts (Rossiter et al., 2010).

Wilkinson (1970) outlined that spoken language has also been illustrated by psychologists as not only vital for communication purposes, but also to develop a complete personality and our cognitive abilities. Consequently, it is important that students with EAL/D develop the ability to communicate verbally in the English language as most social interactions in which we engage are governed by speech (O’Toole, 1991). A number of children within Australia speak a language other than English at home. However, their functional oracy in their mother tongue does not travel well beyond the context of their home due to English being Australia’s native language and mother tongue.
Every facet of education is initially carried out through talk – whether it is in the form of an instruction, question, discussion, or statement. The Milton Keynes Council (2004) outlines that students with EAL/D are generally taught within mainstream classrooms, and are presented with two simultaneous tasks within the school environment: the need to learn the curriculum content, and the need to learn the English language. Those students with English as an additional language or dialect who possess minimal to no English speaking skills, and consequently, are seen to struggle not only academically, but also throughout multiple aspects of their life (McCormack & Klopper, 2016). The P-10 Language Education Framework (1989) states,

Language plays a crucial role in every aspect of our lives … each day we use language to develop, maintain and express out sense of identity; establish and maintain relationships; organise out thoughts and learn about the world; obtain information, direction and advice, and inform, direct and advise others; participate in recreational and imaginative activities; appreciate and contribute to our cultural heritages. (cited in O’Toole, 1991, p. 1).

Students will not be capable of expressing their thoughts and ideas in the written form if they are unable to verbalise these thoughts and ideas first. Williams and Roberts (2011, p. 5) support this by stating that “you cannot write if you have nothing to say,” and it can thus be concluded that comprehensive language output is just as important as the language input that students receive. Therefore, oracy has the potential to provide additional language or dialect learners with ample opportunities to communicate creatively, purposefully, and productively with native English speakers in a variety of contexts that are exciting, engaging, and meaningful (Williams & Roberts, 2011). One approach to the development of oracy pedagogy is through the
use of music due to the many similarities and connections that music and oracy share neurologically and through the elements of pitch (intonation) and rhythm (stress).

Despite the investigation and highlighted importance of oracy and how it can assist in the development of other subject areas, evidence is challenging to find on how to develop oracy. A study was conducted in the United Kingdom recently to investigate the development of oracy through the creation and implementation of an Oracy Skills Framework, which will be summarised in the next section. However, unlike my research, it targeted older students (both English and non-English speaking) and did not incorporate music as an instructional tool to develop student oracy.

2.6.4 ORACY SKILLS FRAMEWORK

The University of Cambridge (2014b; 2014c) recently conducted a study in regards to the development of oracy skills in Year 7 students. It was considered a developmental project in which an Oracy Skills Framework and Oracy Assessment Toolkit were created and piloted. Results were then brought together during the final stages of the research project to create an Oracy Curriculum, Culture and Assessment Toolkit. Despite being a pilot study, this work informed my study as it specifically outlined the components and skills of oracy, reinforced the importance of developing oracy for students, and highlighted particular approaches researchers undertook in attempt to develop oracy that proved successful. However, this approach used did not involve any musical approach or focus on students with EAL/D specifically, thus emphasising the significance of my study.

The aim of the Oracy Skills Framework and Oracy Assessment Toolkit was to “establish a whole school approach to developing oracy” and to provide an appropriate and effective structure to support the design, review and refinement of the Year 7
Maxwell et al. (2015) describe this Oracy Skills Framework as underpinning the development of the Oracy Assessment Toolkit that assists in the tracking of students’ progress in the development of their oracy. The creation of the Oracy Curriculum, Culture and Assessment Toolkit provided resources for the measurement and assessment of student oracy skills, and further support materials for schools and staff. This Oracy Curriculum, Culture and Assessment Toolkit included: the Oracy Skills Framework; a Year 7 oracy curriculum; the incorporation of oracy skills in every lesson; the development of a whole school oracy culture; and the Oracy Assessment Toolkit (Maxwell et al., 2015; University of Cambridge, 2014b; 2014c). In particular, the Oracy Skills Framework and the Oracy Assessment Toolkit influenced and informed my research and is discussed in further detail below.

This framework can be described as targeting “the physical, linguistic, cognitive and social and emotional oracy skills” that are deemed necessary for students “to succeed in learning and life” (Maxwell et al., 2015, p. 6). The aforementioned skills are necessary for one to effectively communicate verbally through a variety of styles appropriate to a variety of settings whilst making use of a wide vocabulary and demonstrating fluency (Maxwell et al., 2015). It is here that the key components of spoken language were broken down and categorised into four areas: (a) physical; (b) linguistic; (c) cognitive; and (d) social emotional. The three specific skills of verbal fluency, prosody and pronunciation, which fall under the umbrella of the ‘physical’ component, informed my research as they are not only elements of oracy that need to be develop by students with EAL/D, but skills that require the musical elements of pitch and rhythm.
The Oracy Skills Framework has informed my study of the four skill areas required for oracy, as well as what is involved within each area. It highlighted the skills of verbal fluency, prosody, and pronunciation under the umbrella of the ‘physical’ component of oracy, and reinforced that the development of these three specific skills requires the active use of one’s voice. This aligns with Gordon’s Music Learning Theory as the primary musical vehicle used in that musical approach is the voice. Consequently, it was ensured that the student participants with EAL/D were provided with a number of opportunities throughout the intervention to experiment with their voice and thus learn how to use it effectively when speaking the English language with regards to their verbal fluency, prosody, and pronunciation. This research was further motivated by the perceived need to develop an intervention that targeted these specific oracy skills due to their importance for effective verbal communication.

2.6.4.1 Oracy Assessment Toolkit

This toolkit was devised for teachers to measure and track the progress of students’ oracy skill development. The toolkit comprises of three tests that are conducted on Year 7 students at the beginning and end of the school year (Maxwell et al., 2015). The tests include a formal presentation, the delivery of an instructional activity, and a group discussion (Maxwell et al., 2015). Rating scales are used for each of the three tests to assess and rate each of the four areas of oracy outlined in the Oracy Skills Framework. Using this information, an oracy profile can be created for each student whereby teaching and learning can then be differentiated to suit their individual needs.

The Oracy Assessment Toolkit did highlight potential data collection and analysis methods that could be employed so as to assess the developing level of oracy for the participants in this research for whom English is not their first language. Although the assessment methods from the Toolkit were aimed at Year 7 students, it
did not have tests that could measure what this research intended – the level of verbal fluency, prosody and pronunciation of each student with EAL/D. Therefore, the research team both drew upon and created other data collection and analysis methods to reflect, in detail, what this research was investigating.

The University of Cambridge (2014c) allowed for the recognition of skills required for oracy and informed this study as it allowed a specific component (physical) and associated skills (verbal fluency, prosody, and pronunciation) to be examined with the intent to develop these specifically. Conducted over a nine-month period from September 2013 to July 2014, Maxwell et al. (2015) conducted an evaluation on this project, in which some key conclusions provided and have influenced and informed this research study. The first conclusion stated by Maxwell et al. (2015) is that:

the Oracy Skills Framework provides a useful tool for schools wishing to review and develop their approach to oracy. The associated Oracy Assessment Toolkit provides teachers with a tool that can be used diagnostically and to track students’ progress in developing oracy skills (p. 55).

This conclusion informed this study of the importance and need for oracy to be developed at school, and provided an approach that can potentially be used for students. The Oracy Skills Framework is a broader approach to the development of student oracy that targeted Year 7 students and conducted over the duration of one year. However, the Oracy Skills Framework still informed this study as it presented the approaches that were taken in attempt to develop students’ level of oracy that may be drawn upon and adapted for future research in this area, such as mine that is investigating the development of oracy for students with EAL/D and in younger grades (Years 1 and 2). Furthermore, the assessment tools also have
the potential to be used and adapted for future research in the development of oracy but using music as the pedagogical tool. Although the pilot study results proved effective, the connections between music and speech were not recognised despite outlining particular characteristics under the ‘physical’ component of oracy that are required for meaning making in both music and speech – thus being verbal fluency, prosody (tonal characteristics) and pronunciation. Additionally, they did not employ any musical method in their teaching to assist in the development of oracy, thus motivating the implementation of my study’s music intervention that drew upon musical techniques and approaches to assist in the development of oracy in students with English as an additional language or dialect.

Furthermore, the Oracy Assessment Toolkit created by the University of Cambridge (2014b) informed the selection of assessment methods for my research project as more specific and measurable tests were necessary for objective scoring. Whilst Maxwell et al. (2015, p. 55) state that the “Assessment Toolkit … appears to provide a sound foundation for the development of oracy skills,” the three-star rating method of assessing particular oracy skills was open to interpretation by each individual assessor as it did not discriminate to highlight the specifics in regards to the development of students’ oracy skills.

The University of Cambridge (2014a) recognised the three-star rating explanations were quite broad and lacking in detail. Therefore, in order to better discriminate between students’ level of oracy, it was suggested that there be a ‘plus’ and ‘minus’ augmentation within each of the three categories. Despite this addition, the Oracy Assessment Toolkit still lacked the depth of data required to gain an in-depth understanding the level students are currently at and how their oracy skills are progressing. An assessment example from the ‘physical’ area of oracy for one of the
tasks outlines: “clarity of pronunciation [and] facial expression and eye contact” (Maxwell et al., 2015, p. 71). Although teachers can write additional notes about other elements and behaviours related to oracy they may notice, this is not descriptive enough to ensure an accurate representation of a particular skill, for example pronunciation, as they may not know what they are looking for from students in regards to the assessment of that particular skill. This was based on their subjective assessment and not objective clinical measures. Consequently, this lack of detail and objectivity around the assessment of particular skills required for oracy has informed and influenced this study. Detailed descriptions of particular skills were ensured in each assessment, and measurable tests employed for objective scoring to help eradicate the concern of subjectivity of the qualitative ratings from assessors.

Maxwell et al. (2015) also concluded from the pilot research conducted on the Oracy Skills Framework that “further refinement of the curriculum and associated resources is required to highlight the role, nature and development of exploratory talk and to ensure the diverse opportunities for oracy, formal and non-formal, are provided” (p. 55). This reinforced the need to develop exploratory talk opportunities for use in more non-formal settings. The oracy curriculum devised by the University of Cambridge (2014b) proved effective as a pilot study for developing the level of formal oracy. However, it has not allowed oracy in non-formal situations to be explored and developed. My research focused on non-formal exploratory talk, and placed particular skills of oracy (verbal fluency, prosody, and pronunciation) at the forefront that were developed through music, in particular the focus on tone and rhythm. Therefore, lessons in this research did not focus on students learning and producing formal and academic language, but the opportunity to develop oracy through natural, conversational, and exploratory talk. This was also reflected in the assessment of
students’ oracy in this research as spontaneous speech samples were collected that reflected exploratory talk and a natural communicative setting that could then be analysed for the specific oracy skills of fluency, prosody, and pronunciation.

The final conclusion drawn from the Oracy Skills Framework is that: it was not possible at this stage of development to provide a valid measurement of impact. Piloting in other schools and further research would be required prior to a randomised control trial of the intervention to establish a stronger evidence base on the impact of oracy skills and attainment across subjects (Maxwell et al., 2015, p. 55).

While there are positive indicators in regards to the development of student oracy, due to its developmental nature, Maxwell et al. (2015) state that it is “too early to make confident judgements about the effectiveness of the intervention on students’ oracy skills or learning” (p. 56). Additionally, research conducted by the University of Cambridge (2014b; 2014c) argue for the continued development and refinement of its intervention to assist in the development of oracy given its importance beyond academic contexts. As an emerging field, the study by the University of Cambridge (2014b; 2014c) supports the need to develop interventions targeting specific oracy skills, supporting the argument as to why my research was conducted using music pedagogy as an attempt to develop the verbal fluency, prosody, and pronunciation for students with English as an additional language or dialect (EAL/D). This is particularly important in Australia, as the analysis of Australian immigration statistics revealed that a significant number of immigrants continue to arrive to Australia and come into our classrooms from a country where English is not the native language. Supporting the proficiency in oracy are international education policies recognising that regardless of
their proficiency in Standard Australian English (SAE), students with English as an additional language or dialect (EAL/D) ought to be supported and have equitable access to educational learning.

2.7 EDUCATION POLICIES

2.7.1 INTERNATIONAL

Education is a fundamental right for all, as evident in both the Universal Declaration of Human Rights (UNESCO, 1948) and the United Nations Convention on the Rights of the Child (UNESCO, 1989). Further action was taken with the Education for All (EFA) movement that outlined a global commitment to ensure all (child, youth and adult) had access to quality basic education (UNESCO, 1990; UNESCO, 2017). This EFA movement was not acted upon until a decade later in Dakar at the World Education Forum (UNESCO, 2000) when a Framework for Action was developed that reaffirmed “the vision set out in the World Declaration on Education for All … to pursue a broad-based strategy for ensuring that the basic learning needs of every child, youth and adult are met within a generation and sustained thereafter” (p. 12). This Framework for Action (UNESCO, 2000) poses six goals to be achieved by 2015. Goals three and six are of particular relevance to this research:

- Goal three: “ensuring that learning needs of all young people and adults are met through equitable access to appropriate learning and life skills programmes” (p. 16); and

- Goal six: “improving every aspect of the quality of education, and ensuring their excellence so that recognised and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills” (p. 17).
Previous discussions in this chapter emphasised the importance of oracy for all, particularly students with EAL/D. Therefore, Goal three (UNESCO, 2000) supports this focus in this research as it attempted to assist the development of particular oracy skills (verbal fluency, prosody and pronunciation) that are necessary for social, academic and occupational contexts. In relation to Goal six (UNESCO, 2000), oracy is a skill that transfers to every subject within the curriculum (including literacy and numeracy), as the majority of teaching and learning occurs through verbal communication (McCormack & Klopper, 2016). Consequently, it further encouraged this research to take place as it attempted to develop particular skills that can lead to achieved learning outcomes across the curriculum.

Article 44 of goal six reflects the inclusive nature of the Framework for Action (UNESCO, 2000) through outlining the need for governments and other EFA partners to work together in order to provide “basic education of quality for all, regardless of gender, wealth, location, language or ethnic origin” (UNESCO, 2000, p. 17). Since the UNESCO World Education Forum in 2000, the Incheon Declaration (UNESCO, 2015) has been adopted that continues to represent the “firm commitment of countries and the global education community” to a renewed agenda – Education 2030 (UNESCO, 2016, para. 1). This agenda proposes a holistic, ambitious, and aspirational approach to education whereby no one is left behind (UNESCO, 2016). The Incheon Declaration (2015) recognises that “the heart of Education 2030 lies at the country level [in which] governments have the primary responsibility for successful implementation, follow-up and review” in order to drive change (UNESCO, 2016, para. 1).

Reinforcement by legislation at an international level supports that students with EAL/D ought to be provided with a quality education with the opportunity to develop their literacy, numeracy and essential life skills. One such skill that can be considered
important in a variety of contexts (academic, social, and occupational) that is closely linked to the notion of literacy is oracy. As this research was conducted within Australia, national education policies in regards to the teaching of students with EAL/D needed to be examined.

2.7.2 NATIONAL (AUSTRALIAN)

English is Australia’s native language and is “the predominant means for educating the student population across the curriculum” (Kibler, Valdes, & Walqui, 2014, p. 433). It has become crucial that the teaching and learning of English is featured in an educational language or literacy policy, whether English is the native language of the country or not (Ingram, 2003). Consequently, students with EAL/D are not only “learning English as a subject matter but are learning (and being assessed upon) standards-based academic content in English as well” (Kibler et al., 2014, p. 433).

The 1991 Australian Language and Literacy Policy (ALLP) outlined goals for all Australians, not specifically just those students with English as an additional language or dialect. The ALLP from the Queensland Government Department of Education, Training and Employment (DETE, 1991) can be summarised according to its first goal that “all Australian residents should develop and maintain a level of spoken and written English which is appropriate for a range of contexts, with the support of education and training programs addressing their diverse learning needs” (p. 4). Australia offers immigrants the right to “access appropriate [EAL/D] programmes at least to a proficiency level where their survival or vocational needs are met” (Ingram, 2003, p. 14). For children, the Federal Government funds this programme. However, as Ingram (2003) outlines, the programme is administered by the Education Departments of the particular State or Territory in which they now reside.
In Australia, education is the responsibility of the State or Territory. However, the more recently introduced national Australian Curriculum (ACARA, 2012) aims to ensure more consistency in regards to education between Australian states and territories (Hammond, 2014). The ACARA (2012) is responsible for developing the Australian Curriculum for all Australian students from Foundation to Year 12. Phases of this curriculum have been guided by two fundamental documents: the Melbourne Declaration of Education Goals for Young Australians (Ministerial Council on Education, Employment, Training and Youth Affairs [MCEETYA], 2008), and the Shape of the Australian Curriculum (ACARA, 2012).

The implementation of the Melbourne Declaration (MCEETYA, 2008) was a shift in paradigm, as it focuses on educational goals for all young Australians instead of schooling. Young Australians are the central focus of the goals of this document because the improvement of educational outcomes will positively affect the “social and economic prosperity and will position young people to live fulfilling, productive and responsible lives” (MCEETYA, 2008, p. 7). These goals are:

1. Australian schooling promotes equity and excellence; and

2. All young Australians become:
   - Successful learners;
   - Confident and creative individuals; and
   - Active and informed citizens.

By aiming for all young Australians to become successful learners, the Melbourne Declaration (MCEETYA, 2008) outlines further that all students, including those with English as an additional language or dialect, should be provided with the essential skills in both literacy and numeracy. These skills that are needed for success
throughout all learning areas, through all stages of schooling and post-schooling in higher education and training and/or employment so that as citizens they can make informed decisions in their daily lives. The Melbourne Declaration (MCEETYA, 2008) reflects those outlined in international legislation (UNESCO, 2000) and further support my research which sought to develop particular oracy skills for students with EAL/D, a much needed skill for their future lives. This is due to this research assisting in fulfilling the vision of students becoming successful learners through the provision of teaching and learning opportunities that can steer them toward success in school and beyond.

To ensure all young Australians become active and informed citizens, educational institutions also have the responsibility outlined by the Melbourne Declaration (MCEETYA, 2008) to ensure students are able to “relate to and communicate across cultures, especially the cultures and countries of Asia” (p. 9). The goals outlined within the Melbourne Declaration (MCEETYA, 2008) are of great importance to EAL/D students, as they may possess limited knowledge and skills to be able to ‘survive’ within an English-speaking culture, and need to be supported and educated so that they can eventually become active and informed citizens. The Australian Curriculum (ACARA, 2012) strives to “equip all young Australians with the essential skills, knowledge and capabilities to thrive and compete in a globalised world and information rich workplaces of the current century” (para. 2). This is evident in recent educational policies and the introduction of the Australian Curriculum as it specifically includes and outlines requirements for those students who have English as an additional language or dialect (EAL/D).

The Australian Curriculum outlines how Standard Australian English (SAE) “is essential for success in Australian schools” (ACARA, 2012b, p. 17). The document
also recognises that not only are a number of students within Australian schools learning English as an additional language or dialect, but these students are also simultaneously learning a new language and curriculum content and skills through that new language. Consequently, students with EAL/D may require additional support as well as teaching and learning practices that explicitly address their language needs so that they are provided with ample opportunities to develop their proficiency in the English language (ACARA, 2014b). The Australian Curriculum: English (2012a) does not present any particular process to assist the language development of students with EAL/D, nor does it outline the aspects and elements of language that EAL/D learners may find challenging. However, ACARA (2014a; 2014b; 2015a) developed a teacher resource document for those teaching English as an additional language or dialect. Using this teacher resource, it is the responsibility of the Education Departments within each individual State or Territory to develop teaching and learning strategies that they believe to be effective in developing the English proficiency of their students with English as an additional language or dialect.

ACARA (2014b) developed the English as an additional language or dialect teacher resource since the introduction of the Australian Curriculum, thus reinforcing the “commitment to supporting equity of access to the Australian Curriculum for all students” (p. 5). This resource comprises of a number of related publications including the EAL/D Overview and Advice (ACARA, 2014b), learning progression (ACARA, 2015a), and annotated content descriptions (English) from Foundation to Year 10 (ACARA, 2014a), and student illustrations in relation to the learning progression.

Teachers of students with EAL/D are encouraged to seek specialist support and advice in regards to the teaching and learning of such students. However, the English as an additional language of dialect overview and advice (ACARA, 2014b) provides
guidance for those teachers who many not have specialist EAL/D training or access to a teacher who does. More specifically, the resource (ACARA, 2014b) has been developed to:

- identify curriculum areas that may prove challenging for students with EAL/D and possibly explanations as to why this may be;
- identify where students with EAL/D may be broadly positioned on the English language learning (ELL) progression;
- recognise and understand students’ cultural and linguistic diversity, and how it can be incorporated into the classroom;
- highlight particular teaching and learning strategies and examples that support the learning of students with EAL/D; and
- direct Australian teachers to additional resources and support that are available that can assist and support the teaching and learning of students with EAL/D.

Additionally, the EAL/D Teacher Resource (ACARA, 2014b) provides information for teachers to support the identification and assessment of students with EAL/D and factors that need to be considered for those who have not had access to continuous schooling, as well as broad characteristics that are associated with students learning English as an additional language or dialect.

The teacher resource is the most recent document that is a part of the Australian Curriculum that attempts to make curriculum content accessible to students with EAL/D, thus highlighting the commitment to educational equity for all students. More specific to this research, the EAL/D Teacher Resource (ACARA, 2014b) stresses the importance of developing the oral language skills for students with English as an
additional language or dialect. McCormack and Klopper (2016) reveal that “most facets of education contain some form of verbal communication: discussions, questions, or instructions” (p.2). This aligns with what is stated in the Teacher Resource (ACARA, 2014b) as it defines oral language as a prerequisite that is crucial for learning in which student competency is assumed, therefore, instructions, information, and explanations are conveyed by the teacher via oral means. Consequently, the students’ varying levels of competency in their productive and receptive English oral language can impact the degree in which they are able to engage in the teaching and learning that occurs in a predominantly English-speaking classroom. The focus on the development of oracy for students with English as an additional language or dialect is therefore vital so they are better able to participate in discussions and learning opportunities that are presented to them in the classroom environment.

The EAL/D Learning Progression (ACARA, 2015a) outlines the typical progression students with EAL/D undergo when learning the English language. The Learning Progression (ACARA, 2015a, p. 5) can assist teachers in understanding the “broad phases of English language learning” that students with EAL/D may experience, thus being: (a) beginning; (b) emerging; (c) developing; and (d) consolidating. Furthermore, this progression enables teachers to identify where each individual student with EAL/D is located on the progression in regards to their skills in speaking, listening, reading, and writing. Analysis of the learning progression (ACARA, 2015a), in particular the mode of ‘speaking’, was of relevance to this study as it is investigating the development of oracy, more specifically verbal fluency, prosody, and pronunciation, in students with English as an additional language or dialect. It was found that these specific elements of oracy appeared throughout each of the phases
within the learning progression, but referred to using different terms (ACARA, 2015a) for Foundation to Year 10 under the mode of ‘speaking’; therefore, these characteristics can be advocated as crucial to the development of English oral language in which students with EAL/D should be developing, and thus progressing to, throughout their schooling in Australia. The exception, however, is the Foundation to Year 2 band in the ‘Beginning’ phase, as it does not indicate that such students would evidence any verbal fluency, prosody, and/or pronunciation in the English language. It can be suggested from this source that as students with EAL/D progress in their English language learning, they should develop their oracy (verbal fluency, prosody, and pronunciation) skills.

While the EAL/D Learning Progression (ACARA, 2015a) acts as an indicator for teachers, outlining characteristics students with EAL/D may exhibit and identifying the level at which they are at across the four language modes (speaking, listening, reading, and writing), the Annotated Content Descriptions (English) for Foundation to Year 10 (ACARA, 2014a) provides specific strategies for teaching students with EAL/D to better enable them access to the Australian Curriculum. It states the specific content descriptors of each individual year level from Foundation to Year 10, whilst highlighting appropriate linguistic and cultural considerations and suggesting teaching strategies to employ when teaching that particular area of the curriculum to students with English as an additional language or dialect.

The Australian Curriculum: English (ACARA, 2015b) is divided and categorised according to three strands (language, literature, and literacy) in which a number of sub-strands can be found within each of the strands to specifically address the requirements of the curriculum. It encompasses the teaching and learning of listening and speaking interaction skills, the ‘Literacy’ strand of the English curriculum is of
importance to this research, and in particular the sub-strand of ‘Interacting with others’. Reviewing the related content descriptions and elaborations for the English learning area revealed that students from Foundation to Year 10 ought to learn and demonstrate their knowledge and understanding of specific skills for oracy, thus being verbal fluency, prosody, and pronunciation. Although the term ‘oracy’ and ‘prosody’ are not used in the content descriptions and elaborations, the characteristics of tone, volume, pace, intonation, fluency, and pitch are stated and emphasised in specific descriptions and elaborations for every year level from Foundation to Year 10. As this research only focused on primary school students in Years 1 and 2, Table 1 provides evidence from the Australian Curriculum: English (ACARA, 2015b) from Year 1 to Year 2 inclusive about specific ‘speaking’ or ‘oral language’ content that students ought to be learning, demonstrating, and thus being assessed on within Australian classrooms.

Table 11 presents the progressive nature of specific oracy skills students are expected to learn and demonstrate from Year 1 to Year 2.

Table 11

<table>
<thead>
<tr>
<th>Year Level Band</th>
<th>Content Description</th>
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<tbody>
<tr>
<td>Year 1</td>
<td>Use interaction skills including turn-taking, recognising the contributions of others, speaking clearly and using appropriate volume and pace.</td>
</tr>
<tr>
<td>Year 2</td>
<td>Use interaction skills including initiating topics, making positive statements and voicing disagreement in an appropriate manner, speaking clearly and varying tone, volume and pace appropriately.</td>
</tr>
</tbody>
</table>

Source: Australian Curriculum: English (ACARA, 2015b, p. 11).

Table 11 shows that it is in Year 1 that students are expected to learn, develop, and demonstrate verbal fluency in spoken Standard Australian English. Year Two expectations increase where students are expected to speak clearly and experiment
with appropriate intonation, pitch and volume patterns. The requirements for competency and proficiency in spoken English are seen to increase as a student progresses through their schooling. Recognising these skills as assessable elements of the Australian Curriculum (ACARA, 2015b) reinforces how crucial it is for students EAL/D to not only learn the English language, but demonstrate competency in the specific oracy skills of fluency, prosody, and pronunciation, as their knowledge, understanding, and application is expected in order to achieve particular curriculum requirements. These specific skills of pace (fluency), tone, prosody (pitch and intonation), and clear speech (pronunciation) were targeted in the intervention through the alternating focus of tonal and rhythmic patterns within the songs each week.

Not only are students expected to meet the content descriptions and elaborations under the curriculum sub-strand of ‘Interacting with others’ that addresses speaking and listening skills, but also those expectations under the ‘interpreting, analysing, and evaluating’ sub-strand. As this study targeted Year 1 and 2 students, they are the only content descriptions that have been included here. Year 1 to Year 2 inclusive content descriptions state that students are expected to:

- Year 1: “read decodable and predictable texts using developing phrasing, fluency, contextual, semantic, grammatical and phonic knowledge and emerging text processing strategies, for example prediction, monitoring meaning and re-reading” (ACARA, 2015b, p. 12); and

- Year 2: “read less predictable texts with phrasing and fluency by combining contextual, semantic, grammatical and phonic knowledge using text processing strategies, for example monitoring meaning, predicting, rereading and self-correcting” (ACARA, 2015b, p. 12).
More specifically, students are expected to “read aloud with attempts at [and with developing] fluency and intonation” (ACARA, 2017a, ACELY1649). It is here that the importance of specific oracy skill – fluency – transcends more than just the ‘speaking’ part of the curriculum. It is required to demonstrate competency in one’s reading ability. Consequently, these content descriptions and elaborations from the Australian Curriculum: English (ACARA, 2015b) support the aim of this research study to develop the specific oracy skills of fluency, prosody, and pronunciation for students with English as an additional language or dialect, as they are assessable elements outlined in the curriculum from Foundation to Year 10.

The EAL/D Teacher Resource (ACARA, 2014b) provides a publication that includes the annotated content descriptions for the English learning area from Foundation to Year 10 (ACARA, 2014a). This presents linguistic and cultural considerations for teachers, as well as potential strategies they can employ to assist students with EAL/D access and meet the requirements of the curriculum. The ACARA documents do not present alternate approaches involving interdisciplinary strategies (such as music) to assist the development of the specific oracy skills of verbal fluency, prosody, and pronunciation that students are expected to demonstrate. Consequently, this further reflects the originality of this research study, as current Australian EAL/D teaching and learning practices do not provide alternative approaches such as music, only suggesting additional “time to practice their delivery” of oral presentations, and working with the student one-on-one where you as the teacher can model and “assist them with particular sounds and intonation” (ACARA, 2014a, p, 15). This moves beyond traditional practices suggested as the current teaching and learning strategies, such as those outlined previously from ACARA (2014a), are not specific enough or
appropriate for the development of fluency, prosody, and pronunciation for students with English as an additional language or dialect (EAL/D).

While additional time to practice the delivery of a speech or oral presentation provides students with the opportunity to memorise their speech, it is not going to assist in the appropriate development of verbal fluency, prosody, and/or pronunciation if students have not been taught these skills, and are possibly practicing and rehearsing them incorrectly for an extended period of time. Additionally, working with the student one-on-one, in theory, appears to develop sufficient skills; however, it is impractical due to student numbers and limited teacher time. In a classroom, there may be more than one student for whom English is an additional language or dialect, therefore, organising time to develop specific skills in a one-on-one fashion when there is a whole class full of students requiring teaching is impractical. Additionally, these oracy skills of verbal fluency, prosody, and pronunciation cannot be sufficiently developed during the course of one or two lessons; they require time which the teacher may not be able to consistently provide due to the other students in the class and additional administrative teacher duties.

It is also suggested in the Teacher Resource (ACARA, 2014a) to let students practice oral presentations in one-on-one or small group interactions with their peers. Unless the student has developed the confidence to willingly attempt to communicate verbally in the English language in front of their English-speaking peers, it may exacerbate the issue and discourage the student from speaking in English due to their lack of competency in the language.

A move beyond traditional teaching approaches is suggested as research has demonstrated the prevalence of music in our everyday lives (Dinham, 2011), as well
as the neurological similarities between the processing and production of music and speech (Jackendoff & Lerdahl, 1982; Maess et al., 2001; Moreno, 2009; Salcedo, 2010; Schellenberg, 2009; Tallal & Gaab, 2006), and shared elements of pitch and rhythm. Consequently, educators and practitioners should consider such evidence and these connections harnessed in which attempts can be made to integrate musical practices into their teaching in order to develop students’ oracy. This informed and influenced the design of the intervention implemented in this research, as the parallels between music and speech were recognised and drawn upon throughout the intervention in attempt to develop the oracy skills of verbal fluency, prosody, and pronunciation in students with English as an additional language or dialect (EAL/D).

Reviewing Australian policies and practices for students with English as an additional language or dialect has revealed that such students are indeed valued and that Australia is committed to equity by attempting to employ strategies to help students with EAL/D access the Australian Curriculum. Furthermore, it highlights that the oracy skills of verbal fluency, prosody, and pronunciation are valued throughout each year level from Foundation to Year 10. However, suggested teaching practices for students with English as an additional language or dialect can be considered traditional, potentially ineffective, and not specific enough to develop such crucial skills that can transcend multiple learning areas of the curriculum, and transfer to contexts beyond the classroom and school environment.

It is important to note that despite being available for all Australian educators, the teacher resource (ACARA, 2014b) “draws on but does not take the place of existing state and territory resources which remain important references for more detailed information” (p. 6). As this research study was conducted in the Australian state of
Queensland, the practices and policies were examined so as to gain insight into the teaching and learning methods currently promoted and encouraged by the state that further informed and influenced the design of the intervention implemented within this research.

2.7.3 LOCAL (QUEENSLAND)

The Queensland Government (2013) acknowledges Australia’s linguistic diversity through the identification of 220 languages or dialects that are now spoken within the State. The Australian Bureau of Statistics (2013) report that 17 per cent of residents under 24 speak in another language or dialect in their home environment. Hammond (2014) indicated that 20% to 25% of Australian school students are EAL/D. It is the role and responsibility of Education Queensland to assist students in developing the appropriate English language skills that are needed in order to participate effectively in a mainstream classroom environment (Hammond, 2014; Queensland Government, 2013). Teachers have a responsibility to recognise the proficiency levels of those students who are in the process of learning Standard Australian English (SAE), and differentiate their teaching and learning accordingly. To assist educators, ACARA (2014a) has developed curriculum guidelines for EAL/D learners.

To develop proficiency in the English language for students with EAL/D, the Queensland Government (2013) believes that such students benefit from specialist and intensive support from teachers of EAL/D. These curriculum guidelines prove to be highly inclusive for students with EAL/D by promoting a curriculum for all through equity and excellence. They outline that schools have a responsibility to plan specialist support for a learner with EAL/D if working in a mainstream classroom so that units of work, lessons and assessment meets the language needs of the student. According to the ACARA (2014b), the teaching and learning practices that effective EAL/D
teachers would implement to develop speaking and listening involve a variety of activities such as visual supports, models of the spoken language, and opportunities to talk and listen. This informed this research in regards to the design of the intervention as students were provisioned with numerous opportunities for the repeated listening and production of tonal and rhythmic patterns that were evident in the song lyrics, as well as the imitation (or modelling) of such patterns when learning and discussing the song.

ACARA (2013a) elaborate further by stating that other language supports to enhance students’ English acquisition may involve adjustments to curriculum and assessment (including delivery), as well as “additional time and support, along with teaching that explicitly addresses their individual language learning needs” (p. 21). Consequently, this research project addressed this issues by using music to investigate its potential to promote oracy for students with English as an additional language or dialect, more specifically verbal fluency, prosody, and pronunciation.

2.8 MUSIC, EAL/D AND THE LEARNER

“Music has the unique quality of integrating emotional, cognitive and psychomotor elements. Not only does music relax and stimulate the listener simultaneously, it also educates learners with regard to listening skills and refined architecture of sound” (Brewer & Campbell, 1991, p. 231). These qualities of music outlined by Brewer and Campbell (1991) align with how the University of Cambridge (2014c) defined the skills and components that combine for oracy. Consequently, these similarities suggest a connection between music and speech and the development of an intervention that draws upon specific music pedagogy in order to investigate its effects on the development of specific skills of oracy (verbal fluency, prosody, and pronunciation).
Lowey (1995) explains that the music of speech is the earliest language dimension that is used and understood by children, and that language should be considered in a music context, not a cognitive one.

Children are seen to pay close attention to the subtle variations in tone and timing, enabling them to flawlessly learn their mother language (Stansell, 2005). When acquiring a language, Mora (2000) asserts that “discourse intonation, the ordering of pitched sounds made by a human voice, is the first thing we learn,” and only later on through interaction that children pick up not only “the musicality of each language, but also the necessary communication skills” (p. 149). Generally, children “love music, singing and imitating,” and appreciate such activities simply because they are “fun and therefore, reduce language anxiety often caused by an inability to understand and speak the target language correctly” (Fonseca-Mora et al., 2011, p. 101). Medina (1990) suggests that during the preschool years, children rely exclusively on oral language in order to acquire language. The concept of ‘song’ so happens to share “all of the same elements of an oral story, yet the vehicle through which the song is conveyed is musical rather than spoken” (Medina, 1990, p. 6).

Singing can be seen as an activity that “mixes linguistic and musical information,” in which Fonseca-Mora et al. (2011) point out the benefits of improving pronunciation, and the learning of grammar and vocabulary (p. 105). Pronunciation can be considered one of the most difficult parts when learning another language, as sounds need to categorised or conceptualised “in a way appropriate to English” (Gilakjani, Ahmadi, & Ahmadi, 2011). It is noted by Richards and Pennington (1986) that stress and intonation are elements that affect pronunciation. Nation and Newton (2009) stress the importance of pronunciation for students with EAL/D as it can impede verbal communication, particularly in regards to intelligibility. They continue by
referring to a phonological loop that occurs in learners’ minds whereby the brain continues to repeat a word within the mind so as to keep in within the working memory or transfer it to long-term memory. It is the working memory of students with EAL/D that is challenged initially when learning English as it is affected by their limited knowledge and understanding of pronunciation patterns and grammar (Nation & Newton, 2009). Furthermore, they indicate that when learning an additional language or dialect, a student’s native (or first) language can significantly impact on the learning of the sound system of that new language, substituting patterns of pronunciation. It is through singing that teachers can facilitate the development of the auditory and oral capacities of students with EAL/D, as well as word articulation and phonetic abilities. Leith (1979) continues, “there is probably not a better nor quicker way to teach phonetics than with songs” (p. 540). Consequently, the choice of drawing upon principles of audiation from Gordon’s Music Learning Theory for this intervention was deemed suitable to assist in the development of pronunciation for students with EAL/D as it would focus on the gradual development of tonal and rhythmic patterns. Further, using Western songs would provide students with the repetition of words and pronunciation of English words that could assist with their working memory and ability to hear the sounds (pronunciation of the word/s) in their heads. Additionally, the use of song had the potential to maintain learners’ interests and thus enable them to respond to and verbally produce the language (Nation & Newton, 2009).

Palmer and Kelly (1992) conducted a study involving song and claim that there is a natural affinity of music to language. Consequently, this affinity can assist in the acquisition of an additional language or dialect through the exaggeration of significant stress and duration elements that are found in song, and the amplification of the normal contours of speech, reflecting verbal fluency, prosody and pronunciation. Using
music as a vehicle provides a rich encoding of language, and Palmer and Kelly (1992) concluded that the musical and linguistic accent structure in song coincides with “accent structure on perception and comprehension such as guiding the listener’s attention, allowing anticipations, and aiding memory” (p. 539). Slevc and Miyake (2006) support this by stating that the structural and motivational properties associated with music in songs benefit new language acquisition. Consequently, musical activities assist EAL/D students in the development of their auditory perception and metacognitive knowledge, as well as aiding their phonological memory.

Murphey (1990) identified that there is a positive association between songs and memory, and defines this as the ‘song-stuck-in-my-head’ (SSIMH) phenomenon. The song-stuck-in-my-head phenomenon (SSIMH) is described by Murphey (1990) as a ‘melodic Din’ that is associated with being the (in) voluntary musical and verbal rehearsal in the mind. As Falioni (1993) affirms, “many people often remember rhyme, rhythm and/or melody better than ordinary speech,” especially when the information is significant or of interest to them (p. 98). Murphey (1990) elaborates on the SSIMH phenomena by stating that the integration of song within the teaching of the English language is beneficial, as he believes that it enables the sub vocal rehearsal of linguistic content, which not only deepens the memory traces of content in the mind, but may be a powerful aspect to second language learning. By using song as a vehicle in this research, musical activities could be developed in order to promote the sub vocal rehearsal of content in the mind so as to assist students with EAL/D in their communicative competence and oracy in the English language.

Initiated in May 1996, the Expressive Language and Music (ELM) project aimed to develop “integrated language and music activities in an interactive setting which would promote the communicative competence of young Asian children learning
English as a second language, by enriching and expanding their overall vocabulary” (Gan & Chong, 1998, p. 41). To aid articulation and pronunciation, they used specific activities (songs, rhymes, tongue twisters and alliterative phrases, finger plays, stories, and puppets) based on the Orff and Kodály approaches to music teaching in order to heighten children’s awareness of the different rhythms and sounds within the English language.

Results illustrated that over the one-year period, all children involved in the ELM project made gains in their language, musical and social skills. Such gains were represented through observations of increased participation and engagement in the activities, the acting out and retelling of stories with or without musical instruments/props, and individual audio voice recordings of each of the 12 students singing. It was evident that through the vehicle of song that students “lost their inhibitions about speaking English and ‘correct’ pronunciation” (Gan & Chong, 1998, p. 44). The natural communicative setting facilitated the necessity for children to interact verbally with the teacher and each other, in which three-quarters of the students achieved a level of satisfactory fluency in English, speaking “longer [and] more linguistically mature sentences” (Gan & Chong, 1998, p. 44). Students’ level of English was primarily assessed via the qualitative means of observation and anecdotal notes in regards to their retelling and acting out of stories, rhymes and songs, verbal contribution during learning, their ability to follow instructions, and their pitch accuracy when singing (Gan & Chong, 1998). Additionally, individual voice recordings were taken of students singing to ensure students were not simply mouthing lines without verbal output (Gan & Chong, 1998).

Studies with qualitative methods are accepted within the social sciences, and despite this study by Gan and Chong (1998) producing positive outcomes on the
English language learning for students with EAL/D, they did not include methods that moved beyond their own observations and interpretations, which could be considered subjective. Accordingly, it informed the methodological approach for this research to include an analysis method that drew upon experts in the field who are not connected to this project, as well as the inclusion of a quantitative measure to support the results produced from the qualitative data sets. This would provide a more accurate representation of the data and reduce potential concerns regarding the validity of the results. Furthermore, the positive results in regards to improved musicality, pronunciation, motivation, and social skills acted as themes that could be considered when analysing qualitative and quantitative data obtained from this research.

In a study of vocabulary acquisition of the English language for second language learners by Medina (1990), four groups were assessed on their vocabulary acquisition through various story telling methods: (a) no use of music but story spoken with illustrations; (b) story spoken without illustrations; (c) use story sung with accompanying illustrations; and (d) story sung without the inclusion of illustrations (Medina, 1990). It was discovered that those students with English as a second language who were exposed to learning with music through song, either with or without illustrations, obtained a dramatically higher number of vocabulary words than those students in the control group, no music or illustrations (Medina, 1990).

Another case study (Richards, 1975) outlines the reverse effects, where English children were taught Spanish solely through a program entitled ‘Spanish through Songs’. This approach demonstrated the effectiveness of song and singing within a second language classroom, as each time the song was sung, the children learned more about the subtleties of the language, such as pronunciations, pitch, tone, and intonation, as well as vocabulary and grammatical forms (Richards, 1975). Spanish
and English are both atonal languages, and this study by Richards (1975) demonstrated that using song as the vehicle to teach an atonal language to students who have a different native language that is also atonal is effective in the development of pitch, tone, and pronunciation, as well as vocabulary and grammar, in the foreign language that is being learned. This informed this research as students’ native language would be denoted as tonal or atonal, which could potentially explain the results for students’ English language (prosody and pronunciation) at the conclusion of the eight-week intervention considering the effects and results outlined by Richards (1975).

Fisher (2001) conducted a longitudinal study to determine if music had the potential to increase language achievement of elementary ESL students with limited verbal fluency in the English language. Two classroom teachers used music while teaching, whilst the remaining two classroom teachers did not use music in their classrooms at all (Table 12).

| Table 12 |
| Teaching and learning approaches in the control and music classrooms from Fisher (2001) |

<table>
<thead>
<tr>
<th>Control classroom</th>
<th>Music classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start day with discussion and revision of calendar and weather.</td>
<td>Start day with a song that had the tendency to focus on positive topics such as: self-esteem, pride, and feeling good.</td>
</tr>
<tr>
<td>Learn and create a variety of words from commercial programs.</td>
<td>Learn and create a variety of words from song titles and lyrics before singing along with the CD recognising the words previously identified.</td>
</tr>
<tr>
<td>Students choose a book they wanted to read and listen to it on tape whilst looking at the pages and illustrations.</td>
<td>Students listen to books accompanied by song CDs that could introduce students to certain concepts such as onset and rhyme patterns.</td>
</tr>
</tbody>
</table>

As shown in Table 12, there were three differences between the control and music groups. This included how they began their morning with students, how they taught students to work with words, and the running of listening stations. Through classroom observations and standardised tests including the Student Oral Language
Observation Matrix [SOLOM] (California Department of Education, 1981), the Yopp-Singer Test of Phoneme Segmentation (Yopp, 1995), and the Developmental Reading Assessment [DRA] (Beaver, 1997), Fisher (2001) discovered that significant differences were evident in the language achievement between the experimental and control groups. Those participants assigned to the ‘musical classrooms’ had significantly increased their linguistic performance when compared to those who were in the control group. Students in the music group achieved higher scores for their oral language development according to the five areas assessed using the SOLOM (California Department of Education, 1981): comprehension, fluency, vocabulary, pronunciation, and grammar. Additionally, the Yopp-Singer Test of Phoneme Segmentation (Yopp, 1995) highlighted students’ ability to orally segment phonemes. According to the DRA (Beaver, 1997), a total of 10 students who were assigned to the ‘musical classrooms’ were evidenced as reading at grade level in both English and Spanish, compared to only one student across the two control classrooms (Fisher, 2001). It can be concluded (Fisher, 2001) that the active use of music can indeed enhance the English oral language achievement for students with EAL/D, as well as their reading proficiency. Fisher’s (2001) study informed this research in regards to methods as it provided tools, in particular SOLOM that could be used to assess specific skills that contribute to students’ English oral language proficiency. Furthermore, it evidenced that the simple integration of music activities in daily classroom routines can assist in the development of oral language and reading skills in students with EAL/D, therefore demonstrating the potential of a music intervention designed to specifically assess the development of oracy in students with English as an additional language or dialect.
More recently, Milovanov, Pietila, Tervaniemi, and Esquef (2010) investigated the phonemic discrimination skills in relation to the musical aptitude of Finnish adults learning English as a second language. A pronunciation test and phonemic discrimination task were used to assess participants’ English skills, and the Seashore Musical Aptitude test (Seashore, Lewis, & Saetveit, 1960a, b, 2003) was employed to investigate and quantify the general musical aptitude of participants in the areas of pitch, volume (loudness), rhythm, time, timbre, and tonal memory. It was discovered that English pronunciation was better in those with higher musical aptitudes than those participants with lower levels of musical aptitude, thus reinforcing the suggested interconnectedness of music and language.

A year later, Milovanov and Tervaniemi (2011) reviewed past research in this area, in which a number of studies (Marques, Moreno, Castro, & Besson, 2007; Milovanov, 2009; Milovanov, Huotilainen, Välimäki, Esquef, & Tervaniemi, 2008; Milovanov et al., 2009; Milovanov, Pietilä, Tervaniemi, & Esquef, 2010) suggested a connection between musical aptitude and the linguistic abilities of second language learners using various quantitative measures including standardised tests and neuropsychological tests and brain measures to provide empirical data to support this emerging field of research. Upon reviewing such literature, a significant relationship was discovered “between higher musical aptitude, better second language pronunciation skills, accurate chord discrimination ability, and more prominent sound-change-evoked brain activation in response to musical stimulus” (Milovanov & Tervaniemi, 2011, p. 1). Milovanov and Tervaniemi (2011) conclude from their review of literature that those who are more musical and have higher aptitudes for music “are able to more efficiently process the music features in both speech and music, both attentively and preattentively” (p. 4). Consequently, this review has informed this
research as it suggests that those participants with higher musical aptitudes should outperform their peers who demonstrate less musicality. Furthermore, by employing a music intervention in this research, correlations between the development of each individual student’s musicality and their level of oracy should be evidenced for all participants.

A more recent study was conducted by Patscheke et al. (2016) to investigate the development of phonological awareness of immigrant pre-schoolers living in Germany. Participants were randomly assigned to one of three programs: music, phonological skills or sports (control group). Each lesson within each program was 20 minutes in length and taught three times a week for 14 weeks, therefore, each participant received 14 hours of instruction within the program they were randomly assigned to. No significant differences between the groups were noted during the pre-test phase. Post-test results revealed significant improvements in phonological awareness for those participants in the music and phonological skills programs compared to the slight increase evidenced by the sports program.

This study (Patscheke et al., 2016) reinforced the potential music has to develop a variety of cognitive skills for immigrant children that are not within the music domain. This encouraged the implementation of the music intervention within this research project, as it is investigated the development of oracy for immigrant children using a musical approach. Furthermore, this study (Patscheke et al., 2016) helped inform the selection of time frames for the intervention delivered within this research and adjusted according to the Australian school calendar. While the participants in this study (Patscheke et al., 2016) were immigrant children, it was reported that 90% of participants had lived in the country for more than five years. This influenced the criterion sampling of this research project as participants were to have only recently
arrived to the country (Australia), therefore, investigating the effect of a music intervention on those who were assessed as possessing limited to no speaking skills in the target language (English). It is recognised that this research field is still in its infancy in regards to music and speech correlations, and neuroanatomical changes. However, from more recent studies, it has been suggested that even limited exposure to music has the potential to assist in the development of linguistic functions.

Where previous studies have extensively researched and assessed the reading and writing capabilities of EAL/D students, it has paved the way for this study to focus on the development of oracy through the musical medium of song due to their similarities in processing and production. By listening to songs in the target language and singing them, it improves listening skills, which is deemed as “one of the essential capacities necessary for language learning,” because if a person is “unable to distinguish between specific phonemes and intonation which differentiate the target language from the mother tongue, it will be impossible to learn the new language” (Fonseca-Mora et al., 2011, p. 105). Earlier reviews of literature presented in this chapter outlined the various areas and numerous skills required for the development of oracy (University of Cambridge, 2014c). However, it can be simplified as demonstrating the general ability in speaking and listening (the ORACY Australia Association Inc., 2016). Consequently, possessing proficient oracy skills requires the simultaneous, and sometimes unconscious, development of listening skills. It is the equal importance of listening that influenced the selection of principles from Gordon’s Music Learning Theory to be drawn upon to implement the intervention that aimed to develop the verbal fluency, prosody, and pronunciation for students with English as an additional language or dialect (EAL/D).
It is recognised that there are similarities between music and speech, and research has only been conducted more recently to investigate the use of music to develop particular English speaking skills of students with English as an additional language or dialect. Harnessing the similarities between the two domains, research indicates that song is a potential musical vehicle that can assist in the development of oracy for students with EAL/D.

2.8.1 USING SONG TO DEVELOP ORACY

Song is a phenomenon that is seen to synthesise both linguistic and musical information; it contains the same elements found within oral stories, yet conveyed via a musical vehicle instead of a spoken one (Medina, 1990; Fonseca-Mora et al., 2011). Gan and Chong (1998) highlight that the repetitive, rhythmic nature of songs, rhymes and simple chants serve to motivate students, and exposure to such ‘musical language’ provides a perfect linguistic context for children to build their confidence in communicating. The use of song to develop language is further supported by Eken (1996), who suggests it can be used to:

- present a topic, a language point, lexis, etc.;
- practice a language point, lexis, etc.;
- focus on common learner errors in a more direct way;
- encourage extensive and intensive listening;
- stimulate discussion of attitudes and feelings;
- encourage creativity and use of imagination;
- provide a relaxed classroom atmosphere; and
- bring variety and fun to learning (p. 46).
This research by Gan and Chong (1998) and Eken (1996) support the use of song throughout the intervention in this research so as to develop students’ oracy skills as it was evidenced as encouraging both extensive and intensive listening, stimulating discussion, encouraging creativity and imagination, providing a learning environment that was relaxed, and brought fun to the learning through a varied approach to language learning that students had not previously experienced.

The positive use of music and song as the vehicle for instruction reinforced the choice to draw upon principles of audiation from Gordon’s Music Learning Theory to develop the verbal fluency, prosody, and pronunciation of students with EAL/D. The human voice is the primary instrument used within MLT whereby students are gradually exposed to and explore basic tonal and rhythmic patterns reflected in songs in the English language, before moving on to more complex patterns as a result of their developing audiation skills. Drawing upon these principles of audiation to investigate the potential development of oracy in students with EAL/D was appropriate as the focus on pitch and rhythm are fundamental ideas and processes that are similar to those when learning a language (Gordon, 1997; Taggart et al., 2000).

There are a variety of factors that can negatively impact on one’s ability to learn a language, in which Larsen-Freeman (2000) indicates that anxiety is a significant factor that can impede language learning, This is supported by Ara (2009) who states feeling “uncomfortable or under pressure in the language class” can prevent a child’s language learning process (p. 169). The need for reduced anxiety throughout one’s language learning process connects to the Affective Filter Hypothesis outlined by Krashen (1982; 1985), in which a weak affective filter enables optimal learning can occur as a “positive attitude towards learning is present” (Schoepp, 2001, p. 1). The use of song in the EAL/D classroom and the intervention for this research provides
affective benefits through the provision and maintenance of a harmonious and comfortable classroom environment, as students’ anxiety levels are reduced and their interests fostered, thus increasing their motivation and willingness to learn the English language (Eken, 1996; Saricoban & Metin, 2000; Shen, 2009).

Lessons that are perceived as boring and tedious have also been identified as a factor that can hinder children’s learning process regardless of their “innate ability to learn a language” (Ara, 2009, p. 167). Subsequently, the use of song in the EAL/D classroom and throughout the intervention offered “a change from the routine procedures in the classroom” (Lo & Li, 1998, p. 1) whereby learning could be enjoyed by the students due to the minimised pressure that is generally associated with language learning (Ara, 2009; Eken, 1996). This reinforces why children are seen to appreciate activities that involve music, singing, and imitation as anxiety in regards to their inability to communicate in the target language is reduced due to the fun nature of such activities (Fonseca-Mora et al., 2011).

During preschool phases, children exclusively rely on oral language and incidentally acquire vocabulary and linguistic information through the listening of oral stories (Krashen, 1989). In the acquisition of a language, pronunciation can be considered the most challenging part, and it is through singing that teachers can facilitate the development of auditory and oral capacities of students with EAL/D, as well as their word articulation and phonetic abilities (Gilakjani et al., 2011; Leith, 1979).

As a pedagogical tool for instruction, Read (2007) noted that song can indeed be an appropriate approach for second language learning:

Rhymes, chants and songs … can be used as a ritual part of starting and ending lessons, or as an integrated part language, story or topic-based work. They can
also be used to reinforce knowledge and skills in other areas of the curriculum, for example, numeracy or citizenship issues, such as looking after the environment. (p. 182).

Verbal fluency is the real-time processing of language where listeners and speakers partake in verbal communication with speed and ease so that the natural flow of talk is not disrupted (Nation & Newton, 2009; Schmidt, 1992). This can be effectively measured in words spoken per minute (Vanderplank, 1993), and the number of filled or unfilled pauses within one’s speech. Song offers the repetition of several words and phrases which can prove to be easy to remember due to tonal and rhythmic patterning and sequencing. This may improve a child’s ability to articulate words or phrases with minimal to no hesitation, thus increasing their verbal fluency (Yuliana, 2003). Schoepp (2001) also advocates for songs assisting in the development of what he calls automaticity (verbal fluency) as a result of their consistency and repetition. This reinforced the use of song in this intervention in the attempt to develop students’ verbal fluency in the English language.

Although it is suggested song can assist in the development of verbal fluency (mazing behaviour), Crystal’s (1987) ‘bucket theory’ proposes that improvements in students’ verbal fluency may not occur after they participated in the intervention. This theory proposes that our minds can be compared to buckets as they need ‘filling’ with information, and that a number of elements are connected throughout this process (Popper, 1979). However, ‘spillage’ may occur whereby positive developments in a particular area may not necessarily occur due to improvements in other areas. Consequently, verbal fluency (mazing behaviour) was a skill that aimed to be developed within this research. However, considering ‘bucket theory’, it was recognised that it may not improve and other skills associated with it will. As such,
students’ verbal productivity (total number of utterances) and sentence complexity (MLU in words) were also analysed.

Song is recognised as combining both musical and linguistic information and can be deemed as an appropriate vehicle that can assist in the development of verbal fluency, prosody, and pronunciation for students with EAL/D. The repetition of specific tonal and rhythmic patterns enables learners to more effectively remember melodic contours and pronunciation of the English language, and speak with minimal hesitation. Furthermore, it assists in the creation of a safe and supportive classroom environment that has the potential to motivate students and therefore reduce any anxiety they may feel as a result of their inability to proficiency communicate in spoken English.

2.9 CHAPTER SUMMARY

Music is prevalent in our everyday lives, and has recently become a valued learning area in education as a result of its benefits for students socially, emotionally, and academically. Considering the dominant approaches to the teaching of music, the sequence and progression involved when using Gordon’s Music Learning Theory to teach music is found to be similar to that of learning a language. It is these similarities that connected Gordon’s Music Learning Theory to this research project. Based upon the literature, it was hypothesised that the development of tonal and rhythm patterns within a music intervention that developed students’ audiation skills had the potential to assist in the internalisation of English phonemes, syllables, intonation, and stress pattern, which could ultimately translate to the development the verbal fluency, prosody, and pronunciation in students with EAL/D. Whilst not linked to Gordon’s Music Learning Theory, research in the field of neuroscience demonstrates music
positively influences other cognitive domains. More recent discoveries suggest neurological connections between the production, reception, and processing of music and speech, as both employ elements of pitch and rhythm to assist in meaning making, more effectively evident in tonal languages.

The continued increase in Australia’s immigration statistics justified the selection of student participants for whom English is an additional language or dialect (EAL/D). Given that oral language is a significant challenge for students with EAL/D, and that oracy is part of the Australian Curriculum documents (2012), it reinforced the need for this intervention to develop the level of oracy of students with English as an additional language or dialect. The importance of oracy outside of the classroom and academic contexts has further guided this research, as it is a skill that has not been a central area and focus of educational research. Coe (1972) outlined that there has been no controlled use of music in language learning experiments. Serving as further motivation for my study is the lack of empirically based research in regards to music use in language learning classrooms (Griffie, 1989). In conjunction with this, the gaps in the ACARA EAL/D Teacher Resource and the connection between music and speech have highlighted the need to explore the use of a musical approach to develop particular elements of oracy (verbal fluency, prosody, and pronunciation) for students with EAL/D.
METHODOLOGY AND RESEARCH DESIGN

3.1 INTRODUCTION

This research study followed the design of an experimental research methodology. A single-subject experimental design (SSED) using an A-B Withdrawal Design (with a follow-up maintenance phase) was specifically utilised for the employment of the music intervention centred on the principles of audiation (GIML, 2017b) to address the following questions:

1. What is the effect of the music intervention on the musicality of students with English as an additional language or dialect? and
2. What is the effect of the music intervention on elements of oracy (verbal fluency, prosody, and pronunciation) of students with English as an additional language or dialect?

To answer these questions, a mixed method approach to data collection and analysis was undertaken. Figure 1 provides an overview of the paradigm this research is aligned with, and the methodological approach taken.
Pragmatic Paradigm

Single-Subject Experimental Design (SSED) Methodology
(A-B Withdrawal Design + Follow-up phase)

Mixed Methods approach

<table>
<thead>
<tr>
<th>Pre (A)</th>
<th>Intervention (B)</th>
<th>Follow-up phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data collection (baseline establishment)</td>
<td>Data collection (track potential improvement in student oracy)</td>
<td>Data collection (determine maintenance effect)</td>
</tr>
</tbody>
</table>

**Context**

*Broadwater State School*

**Recruitment**

*Criterion Sampling*

**Participants**

6 x EAL/D students; 1 x staff; 6 x parents/guardians

**Data Collection Methods**

*Semi-structured interviews; structured interviews; audio voice recordings; document collection; observations and anecdotal notes; and the Primary Measures of Music Audiation (PMMA)*

**Data Analysis Methods**

*Thematic Analysis; Systematic Analysis of Language Transcripts (SALT-NZAU); Student Oral Language Observation Matrix; EAL/D Rating Scales; Primary Measures of Music Audiation (PMMA); and Triangulation*

**Summary of findings**

*Figure 1. Paradigm and methodological approach employed for this study.*
3.2 PARADIGM

A pragmatic research paradigm was chosen for this study to answer the research questions. Pragmatism emerged primarily from the works of three philosophers, each with their own area(s) of expertise: (a) Peirce [natural sciences]; (b) James [psychology]; and (c) Dewey [psychology and education] (Biesta & Burbules, 2003). Pragmatism can be viewed as a practical philosophy, and its name suggests just this, as the word ‘pragma’ is derived from the Greek language that translates to ‘action’ (McCaslin, 2008). The nature of ‘truth’ is the central focus of the pragmatic paradigm, in which “truth is found in ‘what works’, and that truth is relative to the current situation” (McCaslin, 2008, p. 672).

Pragmatists share the belief that knowledge, or truth, can be “derived from interaction among groups of individuals and the artefacts in their environment, which together create reality” (Schuh & Barab, 2008, p. 68). Rather than simply observing the world, a pragmatic approach can be seen to investigate action, change, and the relationship between knowledge and action through the implementation and investigation of particular interventions dependent upon one’s specific study (Goldkuhl, 2012). Emerging from Pierce’s work, a pragmatic proposition can be understood as “if one were to perform action A, one would observe result B,” capturing the essence of investigating ‘action’ (Talisse & Aikin, 2008, p. 20). This focus on action sees researchers being noncommittal as they draw upon a variety of epistemologies and methodologies in order to investigate “the impact of research on daily practice” (Hathcoat & Meixner, 2015, p. 3).

The meaning and essence of Pragmatism is elaborated on by Goldkuhl (2004) as being an:
• interest for actions;
• interest for actions in their practice context;
• acknowledgement of action permeation on knowledge;
• interest for practical consequences of knowledge;
• interest in what works and what does not work; and
• acknowledgement of the full dialectics between knowledge and action: (a) proper action is knowledgeable action, and (b) proper knowledge is actable knowledge (pp. 14-24).

**Interest for actions**

An interest for actions does not mean a pragmatist disregards other issues in favour of actions and actable knowledge. They recognise that it is the actions of humans that are fundamental to understanding the construction of the social world, and question whether we can truly understand it if actions performed by people are not recognised (Goldkuhl, 2004). This research held an interest for action through its investigation of a music intervention on the development of oracy (verbal fluency, prosody, and pronunciation) for students with EAL/D. It is this instrumental action as explained by Goldkuhl (2004) that reflects the pragmatic nature of this research, as the intervention was the action that attempted to transform students’ levels of verbal fluency, prosody, and pronunciation through such action.

**Interest for actions in their practice context**

Discussion of actions and the practice context should be considered or conceptualised holistically (Goldkuhl, 2004). It is recognised that there is more to practice than individual human actions, as it “determines which actions are adequate within the practice,” also considering shared understandings between groups and individuals, codifications of understandings, and material objects within the practice (Goldkuhl, 2004, p. 5). In this study, the actions of the music intervention were
considered and evaluated for their appropriateness and effectiveness, but the perceptions and understandings from other individuals involved in the development of student oracy (staff and parents/guardians) were also considered.

**Pragmatism means an acknowledgement of action permeation on knowledge**

Pragmatists acknowledge humans adapt according to their environment in favourable ways in order to survive. Pragmatists believe that human action shaping knowledge, largely what they come to know and understand through the actions of others (Goldkuhl, 2004). This was considered in this research through a few different ways. Understanding the actions of students (verbal behaviours and social interactions) prior to and during their participation in the intervention reflect participants’ attempts to adapt to and interact with their current English-speaking environment, as well as their home environment and past experiences. Further, the action of implementing a music intervention shaped theoretical knowledge for how oracy levels could be increased, as well as knowledge in the field in regards to other teaching and learning pedagogies for students with EAL/D. Therefore, an abstract concept was translated to practical reality, reinforcing the pragmatic position of this research.

**Pragmatism means an interest for practical consequences of knowledge**

Pragmatic research is not content with observations and generalisations but the practical consequences of the knowledge; the potential applications of that knowledge and how it can be suitably applied in future situations (Goldkuhl, 2004). Through an interest in change and action, pragmatists may suggest new strategies, methods, procedures and designs, which may tend to prioritise knowledge that has produced positive changes (Goldkuhl, 2004). This research implemented a music intervention
on audiation as a strategy to investigate the potential increase of oracy for students with EAL/D. The knowledge gained from this research has potential for practical consequences as it can be applied to future studies in this area, as well as inform teaching and learning strategies and resources for teachers of students with EAL/D may employ in their classroom.

**Pragmatism means an interest in what works and what does not work**

Pragmatists identify what does and does not work as part of actionable change. Pragmatism is dualistic in epistemology with the conceptions of participants valued, but also the tendency to incorporate empirical phenomena and triangulation to avoid overdependence on the subjective descriptions and opinions of participants (Goldkuhl, 2004). My research valued the opinions and perceptions from participants (parents/guardians and staff member). However, this is paired with researcher observations, blind analyses, and quantitative data that was triangulated and produced more accurate results and a less atomistic description as to whether or not the intervention improved students’ verbal fluency, prosody, and pronunciation.

**Pragmatism means an acknowledgement of the full dialectics between knowledge and action**

A pragmatic approach is a dialectic one where the researcher pursues their task with the complete recognition that knowledge and action are constantly interacting with and influencing one another (Goldkuhl, 2004). This research embodied this dialectic relationship as the act of implementing this specific intervention was based on knowledge gained from relevant academic literature that had been based on past research actions. Additionally, this research produced new actionable knowledge as
future studies could redesign and implement specific changes to the intervention, thus reinforcing the knowledge-action relationship.

Goldkuhl (2004) reveals fundamental questions a pragmatic researcher would ask themselves, which are accompanied by more specific questions that are relevant to the research project. Table 13 outlines these fundamental questions and how this research project addresses them.

Table 13
Fundamental questions asked by the pragmatic researcher

<table>
<thead>
<tr>
<th>Fundamental question</th>
<th>How it is addressed by the research project</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What is the doing?</strong> (What action is performed?)</td>
<td>• The teaching of a music intervention using principles of audiation drawn from Gordon’s Music Learning Theory (MLT)</td>
</tr>
<tr>
<td><strong>Who is doing something?</strong> (Who is the actor?)</td>
<td>• The researcher</td>
</tr>
<tr>
<td><strong>What is done?</strong> (What is the result of the action?)</td>
<td>• Development of oracy (verbal fluency, prosody, and pronunciation) in students with EAL/D</td>
</tr>
</tbody>
</table>
| **When is something done?** (What is the time-context of the action?) | • Three lessons per week for eight weeks  
  • Each approximately 30 minute lessons                   |
| **Where is something done?** (What is the place-context of the action?) | • Students’ usual classroom at the case site                                                               |
| **Towards whom is something done?** (Who is the receiver of the action/result?) | • Six students in years one and two who have English as an additional language or dialect (EAL/D)         |
| **What should this doing lead to?** (What are the intended effects - purposes of the action?) | • Increased level of oracy in student participants  
  • Increased level of musicality in student participants  
  • New knowledge into the field of music education and EAL/D oral language practices  
  • The potential to inform national curriculum development in regards to the teaching and learning practices of students with English as an additional language or dialect (EAL/D). |

Fundamental questions sourced from Goldkuhl (2004, p. 15).

A final question was also posed by Goldkuhl (2004) concerning the unintended effects (positive or negative) as a result of the action. This is discussed later in Chapter Six of this thesis. As discussed, this research reflects the meaning and essence of pragmatism as outlined by Goldkuhl (2004) and further emphasises its alignment with
the pragmatic paradigm, reinforcing its appropriateness as a paradigm for this research to be conducted within.

### 3.2.1 PRAGMATISM AND EDUCATIONAL RESEARCH

Over the centuries, education has become an “object of systematic scientific inquiry,” in which practical orientation is stressed and a major concern for modern educational theorists (Biesta & Burbules, 2003, p. 1). There are expectations that educational researchers generate knowledge that is applicable and relevant for educators on a daily basis so as to help guide and/or support decision making, if … one believes that the world of human action is created through action and interaction, and that knowledge is intimately connected with what people do, then new knowledge opens up new and unforeseen possibilities, rather than telling us the one and only possible way to act. (Biesta & Burbules, 2003, p. 2).

Biesta and Burbules (2003) claim that Dewey’s pragmatic view and approach to knowledge, understanding, and the acquisition of knowledge is dealt within a philosophical framework of action. On the other hand, Dewey’s pragmatic view rejects the notion of dualistic epistemology “in favour of a naturalistic approach that viewed knowledge as arising from an active adaptation of the human organism to its environment” (Field, 2015, para. 1). His beliefs encouraged the “active manipulation of the environment to test hypotheses, and issues of re-adaptation of organism to environment that allows once again for human action to proceed” (Field, 2015, para. 1). It is with this mindset that Pernecky (2016) states “knowledge is not a passive process” but an active one whereby knowledge is “intrinsically human, practical, and transformative” (p. 129). This framework of action from Dewey’s pragmatic perspective suggests knowledge arises from action, and consequences of action are thus how
knowledge is gained – whether to ‘act’ in that same way or not when a similar context or situation arises in the future. It is from this perspective of knowledge, action, and the active manipulation of the environment that highlights Dewey’s concept of experience.

As well as action, Dewey’s philosophy emphasis is on the human experience, revolving around the ideas of beliefs and actions (Dewey, 1920; 1925; 2001). From this philosophical standpoint, beliefs and actions are considered linked in a cycle whereby “the origins of our beliefs arise from our prior actions and the outcomes of our actions are found in our beliefs” (Morgan, 2014, p. 2). Experience is considered social in nature as our thoughts and past experiences have been shaped by others, in which those concepts themselves have been socially shaped (Morgan, 2014). What constitutes experience is “the dynamic participation, the continuing process of an organism’s ‘adjustment’ not simply to environing conditions but within a social and biological environment” (Talisse & Aikin, 2008, p. 22).

My study aligned with the philosophical views of Dewey, as it is concerned with actionable change through the implementation of an intervention. First, the intervention involved the active manipulation of the environment through the use of music as the medium to develop the oracy of students with EAL/D (Field, 2015). In addition, students were observed as adapting to the new learning environment which was being conducted through music, as well as adapting to the social environment as they were required to interact with the researcher (someone they had not known previously) as well as another student participant. The belief that a music intervention could develop students’ oracy informed action, as pedagogical knowledge would arise as a result of the consequences of the active manipulation of the environment.
From this theoretical perspective, the researcher decides on the most appropriate approach to collecting and analysing data based upon its practicality and suitability in answering the research question(s) (Creswell, 2013; Patton, 2002; Pernecky, 2016). Creswell (2013, p. 29) outlines that the use of pragmatism in more qualitative fields such as the social sciences (including education) places more emphasis on “conducting research that best addresses the research problem [or question]” by employing a variety of methods for data collection and analysis. Patton (2002) also emphasises this fit by deeming methods and processes appropriate according to the particular research situation or interest. This reinforces how the pragmatic paradigm does not have a single, traditional approach to research; there is no ‘best’ way to conduct research as it is “open to multiple strategies, methodologies, and methods, the choices of which are driven by the research problem” (Pernecky, 2016, p. 130). Consequently, a variety of data collection and analysis methods were considered as potentials when deciding how to most effectively answer the research questions.

Considering the nature of the pragmatic paradigm, Creswell and Plano Clark (2007, p. 32) outline certain types of research problems and the most appropriate method or design best suited to investigate said problem. An experimental design for this research was employed to answer the research questions. This is due to this research investigating the effectiveness of an intervention for the development of oracy, in particular verbal fluency, prosody and pronunciation, in students with English as an additional language or dialect (EAL/D).

My background as a teacher means that focus on the individuality and diversity of students is evident in my study’s methodological approach. Foreman (2011) states “teachers need to understand the diversity of their students” in order for optimal
learning environments to be created, and that effective teaching “provides for the individual needs of all students” (p. 3). Furthermore, he asserts that classrooms will more than likely contain “students from many different countries, from varying religious backgrounds and from a variety of family arrangements including nuclear families, single parent families, shared parenting families and same-sex parent families,” all of which are factors that are highly individual and can influence a student’s academic performance (Foreman, 2011, p. 3). Our individuality results in us learning at a different pace to others, due to no two individuals having the exact same experiences outside of the classroom; our lives beyond the classroom influence our learning progress. This reinforced the need to consider the individual learning needs of student participants in this research. Hence the methodological approach of a single-subject experimental design was employed as it was deemed to be the most appropriate for the conduct of this research.

3.3 METHODOLOGY

3.3.1 SINGLE-SUBJECT EXPERIMENTAL DESIGN

A single-subject methodological approach has been used in a range of different research fields and disciplines including medicine, exercise science, psychology, and education – more specifically special needs and gifted and talented education. This methodological approach can be referred to through a variety of terms such as single-subject, single-case, behaviour analysis, or within-subject research. However, for the purpose of this research, the term single-subject experimental design (SSED) has been used (Creswell, 2013; Morgan & Morgan, 2009). Despite its name, more than one participant can be involved in a research project that employs this methodology, as evident in this research. Single-subject experimental designs differ from the
traditional group design methodology as all processes occur at “the level of the individual subject” (Morgan & Morgan, 2009, p. 29). Consequently, SSEDs do not aggregate data across multiple participants. Rather, data analysis and interpretation is at an individual level through observation and manipulation of independent variables (Morgan & Morgan, 2009).

Kazdin (2011, p. iv) emphasises the importance of research using the SSED methodology for the development and evaluation of interventions that are created to “alter some facet of human functioning,” and as its name suggests (e.g.: single subject), it is an approach that enables the evaluation of subjects at an individual level. Whilst group designs are valid and can be used in the educational field, group design methodologies cannot be considered appropriate when attempting to report the effects of interventions on individuals due to our individualities. Morgan and Morgan (2009) support this view by offering “behaviour is a natural phenomenon that takes place at the level of the individual organism” (p. 28). Using the single-subject experimental design in this study provided the opportunity for the behaviour of oracy (verbal fluency, prosody, and pronunciation) of individual student participants to be observed and analysed over a period of time (Creswell, 2013). This methodology recognised that students’ individualities could influence their learning in which students therefore acted as their own control measure. This would prove effective for the evaluation of potential effects on individual participants as a result of the intervention.

Single-subject experimental designs (SSED) aim to provide practitioners with a means to individually evaluate evidence-based interventions and how they affect the performance and/or behaviour of each participant (Burgard et al., 2011). This approach involves the identification and targeting of significant social behaviours, in which an intervention is devised and implemented in order to produce data to
demonstrate the potential effectiveness of said intervention upon the selected behaviour (Bailey & Burch, 2002). This approach to research is summarised by Bailey and Burch (2002) as,

... the study of socially important behaviour that can be readily observed, and it uses research designs that demonstrate functional control, usually at the level of the individual performer. The procedures developed by this field must be replicable, and the extent of the resulting behaviour change must have important practical significance for the social community. (p. 17).

The approach identified by Bailey and Burch (2002) is reflected in this research through the development of one’s level of oracy as the behaviour required for a range of purposes – social, academic, and occupational – in which academic is primarily of interest for this research study. The intervention was created and implemented to produce data that demonstrated its effectiveness upon the selected behaviour.

The behaviour targeted (the independent variable) for the intervention in this research project was the development of oracy in students with English as an additional language or dialect with particular reference to their verbal fluency, prosody, and pronunciation in the English language, through a music intervention. As previously discussed, single subject experimental designs aim to help people in everyday contexts. Through the SSED methodological approach, an intervention could be implemented to investigate the relationship between music and elements of oracy. If improvements in musicality were noted, then it was hypothesised that these would translate the improvements in students’ verbal fluency, prosody, and pronunciation. This knowledge has the potential to assist educators with the creation, refinement, and implementation of future pedagogy regarding the development of oracy in students.
with EAL/D. This reflects the underpinnings of pragmatic philosophy that involves the reciprocal nature between knowledge and action continually informing one another.

There are six types or categories within single-subject experimental designs (Creswell, 2013). However, for the suitability of this research, the A-B withdrawal design was used with the inclusion of a follow-up maintenance phase.

### 3.3.2 A-B WITHDRAWAL DESIGN

This approach to conducting research is to demonstrate the effectiveness of a particular intervention on target behaviour through its implementation and removal (Engel & Schutt, 2009; Graham, Karmarkar, & Ottenbacher, 2012). It is the assumption that the target behaviour (oracy) should yield improvements following the intervention, and that its improvement would be maintained once the intervention ceased (Engel & Schutt, 2009). This prompted the inclusion of a follow-up maintenance phase. For the purpose of this research, the A-B withdrawal design was implemented. To assess if the effects of the intervention were maintained after the completion of the intervention, a follow-up maintenance phase was included.

A simple A-B withdrawal design includes a baseline phase (A) and an intervention phase (B), where the same measures are repeated throughout both phases. Whilst simplistic in its design, this A-B approach can control “some threats to internal validity” (Engel & Schutt, 2009, p. 229) and effectively demonstrate a potential relationship between dependent and independent variables (Byiers, Reichle, & Symons, 2012). Although an intervention phase is introduced and conducted, there are limitations to the A-B withdrawal design as there is no evidence to suggest that the results recorded from the intervention phase were not a natural progression of behaviour, in that it still would have occurred regardless of the implementation of the
intervention (Wolf & Risley, 1971). As potential maintenance effects of the intervention wanted to be investigated, this research followed the A-B withdrawal design but added a follow-up maintenance phase using the same data collection methods employed during the baseline (A) and intervention (B) phases. The A-B withdrawal design can be considered pre-experimental and appropriate for preliminary studies (such as this research), as the effects of the intervention can provide preliminary data when the researcher is limited for time and/or resources (Byiers et al., 2012). This was a significant factor for this research as it was bound by the school calendar, student attendance, and maintenance of student participants for the entire intervention period.

Although considered the weakest of the single-subject experimental designs (Richards, Taylor, Ramasamy, & Richards, 1999), the A-B withdrawal design was the most appropriate design to be employed for this research instead of the A-B-A Withdrawal Design due to the time limitations imposed by the school calendar year. The A-B-A design represents the inclusion of a second ‘A’ phase after the completion of the intervention that can be considered a ‘checking’ mechanism. It allows researchers to be certain that the changes in the target behaviour were in fact as a result of the intervention itself instead of other variables (Richards et al., 1999). Although the eight-week music intervention was started immediately after baseline data had been collected, a second ‘A’ phase (return to baseline) could not be implemented due to the school calendar. Therefore, a follow-up maintenance phase was included in this study 10 weeks later to evaluate if progress was maintained.

This follow-up phase had the potential to provide additional support to demonstrate the effectiveness of the intervention (B) on the “manipulation of the independent variable [oracy] by withdrawing [or completing] the intervention” (Byiers, et al., 2012, p. 7). The inclusion of this follow-up phase was encouraged as the
assumption in this research was that the target behaviour of verbal fluency would yield positive results in which such effects (to some extent) would persist after the intervention had been removed, thus suggesting a carryover effect after the conclusion (or withdrawal) of the intervention.

The A-B Withdrawal Design with follow-up maintenance phase that was followed in this research is shown in Table 14.

Table 14

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (baseline)</td>
<td>• Recruitment of student participants</td>
</tr>
<tr>
<td></td>
<td>• Establishment of baseline data for each student participant</td>
</tr>
<tr>
<td>B (intervention)</td>
<td>• Implementation of the intervention (8 weeks)</td>
</tr>
<tr>
<td>Follow-up/maintenance</td>
<td>• Collection of data (10 weeks later)</td>
</tr>
</tbody>
</table>

Richards et al. (1999) described the purpose of establishing a baseline phase as twofold – (a) it enables the researcher to gain an understanding of the standard dependent variable(s) chosen; and (b) it can provide additional information that may influence the target behaviour. The baseline process in this research study enabled the researcher to gain an understanding of each student participant individually in regards to their level of oracy (verbal fluency, prosody, and pronunciation) prior to their participation in the music intervention. It assisted in gaining data from other participants (EAL/D staff member and parents/guardians) in which such variables could explain unexpected results pre-intervention as well as potential progress throughout the implementation of the intervention.

Phase ‘B’ consisted of the implementation of the eight-week music intervention where repeated measurements using a digital voice recorder continued to collect student speech samples. The follow-up maintenance phase included the collection of
three more speech samples using the digital voice recorder. This is important, as students cannot completely forget learning that they have been exposed to and intentionally taught. More specifically, my research aimed to develop the oracy (verbal fluency, prosody, and pronunciation) across students using a music intervention. The processes and strategies students learned to assist their oracy development cannot simply be forgotten.

When employing an A-B Withdrawal Design, it is important to ensure small group sizes so that it aligned with the philosophy underpinning the single-subject experimental design methodology – to investigate the change within *individual* participants and not the reporting of statistical means across groups (Hegde, 2003). This was taken into consideration by ensuring that the intervention was delivered to participant students in pairs, further strengthening this methodological approach.

### 3.4 METHODS

#### 3.4.1 MIXED METHODS

This research study applies a mixed method approach to data collection and analysis, in which quantitative and qualitative methods were combined within the single study to investigate the effect of the music intervention on the development of oracy for students with English as an additional language or dialect. The pragmatic paradigm affords “primary importance of the question asked” (Creswell & Plano Clark, 2011, p. 41), and allows for a variety of different methods to address the research question or issue by first looking at results, actions, and the consequences of such actions (Biesta, 2010; Cherryholmes, 1999).

Johnson and Onwuegbuzie (2004) outlined how mixed methods research can be considered a third research movement. They claim that it goes beyond the feud
between traditional quantitative and qualitative paradigms and offers “a logical and practical alternative” to research, reinforcing the notion of pragmatism (Johnson & Onwuegbuzie, 2004, p. 17). My research design combines both approaches and uses the techniques, methods, concepts and language from quantitative and qualitative approaches within the single study (Johnson & Onwuegbuzie, 2004). Mixed methods have the potential to “offer [the] depth of qualitative understanding with the reach of quantitative techniques” (Fielding, 2012, p. 124). My mixed methods approach does not limit, restrict or constrain myself as the researcher as it encourages the use of multiple approaches and techniques in order to answer the aim of the research question and two research questions.

Mixed methods research can be considered inclusive and complementary. The “research methods chosen should follow research questions in a way that offers the best chance to obtain useful answers” (Johnson & Onwuegbuzie, 2004, p. 18). As mixed methods research allows the researcher to draw upon an array of techniques and approaches from qualitative and quantitative fields, it is important that the researcher recognises and considers the strengths and weaknesses of both before conducting their study. Johnson and Onwuegbuzie (2004) highlight that the mixed methods approach enables the researcher to combine (mix) techniques and strategies to use what Johnson and Turner (2003) outline as the fundamental principle of mixed research. This principle proposes that complementary strengths with no overlapping weaknesses is the likely result of implementing and combining a variety of techniques, methods, strategies and approaches from both quantitative and qualitative fields (Brewer & Hunter, 1989; Johnson & Turner, 2003), and will allow a better understanding of the research question through the provision of concrete and visual data, as well as descriptive information that can offer differing perspectives from all
participants involved. This principle is reflected in this research as the quantitative and qualitative methods involved provided both visual data and descriptive information that could be triangulated to offer a more valid, credible, and comprehensive understanding of the research question.

Scott and Morrison (2006) provide a range of key arguments for the use of a mixed-methods approach, and those of value to this study include:

- triangulation is enhanced through the combination of quantitative and qualitative methods, as different methods are employed to investigate the same phenomenon in attempt to offer a holistic and rich account, in which findings from the data sets can compared and corroborated;
- the reciprocity of quantitative and qualitative facilitation as they can each inform the other data set;
- provision of a ‘fuller’, more comprehensive account and picture of the overall research, as potential trends could be noted and examined, and in-depth knowledge gained from the inclusion of participant perspectives;
- the facilitation of better understanding relationships between the variables involved, as a variety of methods were employed that could be triangulated to illuminate patterns among the data; and
- the appropriate emphases allowed at different stages/phases within the research process, as it enabled either qualitative or quantitative data collection and analysis methods to be employed so as to provide the best possible answer to the research aim and two research questions.

The qualitative data collection and analysis techniques employed within this research can be seen to describe the phenomenon being investigated – the
development of the oracy skills of verbal fluency, prosody, and pronunciation. Whilst the quantitative measures still describe the phenomenon, they assist in producing concrete evidence that helped investigate causal relationships, that being the relationship between the music intervention and oracy development (Howe, 2012).

The mixed method approach research for this study demonstrates alignment with the pragmatic paradigm. A core idea of pragmatism is outlined by Denscombe (2010) as having an understanding that knowledge is provisional; “what we understand as truth today may not be seen as such in the future” (pp. 148-149). Consequently, mixed methods encourage researchers to move beyond the use of just qualitative or just quantitative research, as pragmatism boasts “there is no single, best ‘scientific’ method that can lead the way to indisputable knowledge” (Denscombe, 2010, p. 148). Creswell and Plano Clark (2007) support this notion of pragmatism, as they place “primary importance on the question asked rather than the methods” (p. 23). This indicates that the researcher can employ multiple methods that they deem appropriate as informing and answering the question or problem under investigation, thus valuing objective and subjective knowledge. It is this approach that reinforces the pragmatic view that is “pluralistic and oriented toward “what works” and practice” (Creswell & Plano Clark, 2007, p. 23). A mixed method approach allows both qualitative and quantitative methods to be mixed. This provides empirical evidence in regards to another core idea and guiding principle of pragmatism of ‘what works best’ to more effectively answer research questions and problems. This relates to my research project as the most appropriate methods (either quantitative or qualitative) could be employed to address the research questions investigating music’s influence on the development of oracy for students with English as an additional language or dialect.
Cameron (2009) supports this through offering “proponents of mixed methods research have been linked to those whom identify with the pragmatic paradigm” (p. 140). Through this mixed method approach, it moves beyond what has been associated with the pragmatic paradigm in doing what works to one whereby issues are pursued using methods that are identified as the most meaningful and appropriate (Morgan, 2014). Denscombe (2010) asserts that mixing methods from “alternative and incompatible paradigms of research” is deemed desirable for social researchers as answers can be provided more effectively in regards to what works, in comparison to a qualitative or quantitative approach (p. 149).

Dewey’s pragmatic philosophy emphasised and questioned the nature of human experience, and thus the interconnectedness and cyclical nature of our beliefs and actions. It is the recognition of inquiry being social in nature that recognises the value of qualitative methods being used in my research study to ensure rich, descriptive data is obtained to provide a more in-depth understanding of reality and the social construction of knowledge. However, recognising the intangibility of oracy that is being investigated, and the potential subjectiveness of qualitative data, it was deemed appropriate to also employ quantitative measures to investigate and provide a better understanding of the research questions.

Fielding (2012) highlights that the reason researchers mix methods is to “integrate the two fundamental ways of thinking about social phenomena” (p. 126). Each research study reflects a different methodological approach, in which Denscombe (2010) reinforces the researcher’s decision to use a mixed methods approach “should be based on how useful the methods are for addressing a particular question, issue or problem that is being investigated” (p. 150). The mixed methods approach was deemed appropriate for this research study, as the combination of particular methods
and designs more effectively illuminated, investigated, and answered research questions better than the use of a pure qualitative or quantitative approach.

It is through this pragmatic lens that practical consequences of this research project could arise given the understanding of what did and did not occur, so that knowledge can inform future actions, and those actions can provide further knowledge within the field of education. This is particularly important in the field of education whereby pedagogical approaches are continually being investigated and refined so as to more effectively cater to the dynamic needs of students.

3.5 THE INTERVENTION

The intervention drew upon the principles of audiation (GIML, 2017b). It was structured and taught sequentially by myself as the researcher using the Jump Right In: the Music Curriculum Teacher’s Guide Book 1 compiled by Taggart et al. (2000). This was selected as the primary source of reference for implementing this intervention as the teacher’s edition has sequential lesson plans that focus on:

- tonality;
- meter;
- teaching plan/instructions; and
- how to coordinate the teaching plan with learning sequence activities.

The University of Cambridge (2014c) suggested that physical and appropriate use of the voice is a necessary skill required for the development of oracy as it encompasses fluency and pace, tonal variation, pronunciation, and voice projection, thus being the music equivalent of tonality and meter. Tonality and meter were important elements to consider, as their provision in each lesson
would assist in the development of components of oracy. The intervention focused on the development of specific tonal and rhythmic patterns so one learns to ‘hear’ the sound in their head when it may not physically be present.

The inclusion of a teaching plan and instructions for each song used in the guidebook was important as it assisted with the teaching of audiation and consistent delivery of the intervention to each group of student participants. The provision of learning sequences and the coordination of them with the teaching plan were vital for the development of audiation for student participants. Each song provided short tonal and rhythmic learning sequences ranging from two to four notes/beats, depending on the stage that students were at in the intervention, that were reflected in the particular song. The procedure for implementing the intervention is detailed in the next section.

3.5.1 INTERVENTION PROCEDURE

Figure 2 provides a visual representation of the intervention procedure used in this research before elaborating below.
1. **Check participant consent**
   - Ensure signed consent received from:
     - Student participants
     - Parents/guardians
     - Intensive English Centre Staff member (Mrs X).

2. **Assign groupings**
   - Students were grouped:
     - in pairs
     - through random assignment

3. **Confirm lesson frequency**
   - Lessons were:
     - Delivered three times a week for eight weeks
     - Each 30 minutes in length

**PRIOR TO COMMENCING THE INTERVENTION**

**INTERVENTION PROCEDURE FOR EACH PAIR**

4. **Song selection**
   - Alternating focus of the song each week
     - Tone – weeks 1, 3, 5, 7
     - Rhythm – weeks 2, 4, 6, 8
   - **Weeks 1 and 2**
     - Hello everybody
     - Such a making a circle
     - What do I have?
   - **Weeks 3 and 4**
     - Paddy works on the railroad
     - Sunshine
     - Song of the pirates
   - **Weeks 5 and 6**
     - Haul away Joe
     - Hop old squirrel
     - Dinosaur diet
   - **Weeks 7 and 8**
     - Button you must wander
     - Old Joe Clark
     - Autumn leaves

5. **Tonal and Rhythmic Sequences**
   - Sequences taught during the first 5-8 minutes of the lesson
   - Sing or chant the learning sequence while students listen
   - Students sing or chant learning sequence with researcher
   - Students sing or chant learning sequence in their pair without the researcher
   - Students sing or chant learning sequence individually

6. **Learning the song**
   1. Speak the first line and have students repeat it as a group as necessary.
   2. Then speak the next line and have students repeat it as a group as necessary.
   3. Speak the first two lines together and have students repeat it as a group as necessary.
   4. Repeat steps 1 – 3 inclusive for the lines three and four of the song.
   5. Students speak the whole song (four lines) with the researcher, and then as a group without the researcher.
   6. Once the words of the song have been taught to students, repeat steps 1 to 5 inclusive but singing the song with the aid of the ‘Real Piano’ smart phone application.
   7. Students sing the entire song individually with assistance from the researcher where necessary (e.g.: prompting of lyrics).

*Figure 2. Intervention procedure.*
**Participant consent, groupings, and lesson frequency**

Once consent had been obtained from the students’ parent or guardian, student participants were randomly paired and then the music intervention was delivered. Four data points were collected from students prior to their engagement in the music intervention so that their level of oracy (prosody, fluency, and pronunciation) could be investigated. The intervention was delivered three times a week over the course of eight weeks, in which each intervention lesson was approximately 30 minutes in length. In total, students received 12 hours of the music instruction if they attended all intervention lessons over the eight-week period.

**Selection of songs**

A total of 12 songs were used throughout the intervention and sourced from the *Jump Right In: the Music Curriculum Teacher’s Guide Book 1* (Taggart et al., 2000). Table 15 outlines these songs, when they were used during the intervention, and the music focus of each lesson.
As Table 15 shows, three songs were used each week. However, the first week focused on developing students’ tonal vocabularies, with the following week using the same three songs, but switching the focus to the rhythmic elements of each song. Consequently, three songs were used over a fortnight where the music focus alternated between the tonalities of each song one week, and the rhythmic elements the next, aligning with the teaching of audiation from Gordon’s Music Learning Theory. Appendix A provides an example of a song used during the intervention and the associated tonal and learning sequences that were taught to students.

**Teaching of tonal and rhythmic sequences**

For optimal audiation development, the GIML (2017b) recommends “brief but intense episodes of pattern instruction, carefully sequenced over extended time periods” (para. 7). The GIML (2017c) highlights that the specific teaching of patterns (tonal or
rhythm) should take up the first five to eight minutes of a lesson, with the remainder of the lesson dedicated to the integration and further development of these patterns within a song.

This structure and delivery informed my research with the suggested time given to the development of the specific tonal or rhythmic pattern that was the focus of the lesson, before being integrated and practised within the corresponding song. Each song provided a short tonal and rhythmic learning sequence ranging from two to four notes/beats, depending on the stage that students were at in the intervention, that were reflected in the song. Each lesson would begin with the explicit teaching and practise of the tonal or rhythmic sequences, depending on the focus of the week (tone or rhythm). These required explicit teaching and practise prior to learning the lyrics and song so that students could draw upon their recently developed tonal and rhythmic vocabularies and apply it when singing the specific song. The researcher would sing the appropriate notes with the aid of the ‘Real Piano’ smart phone application or simply chant the appropriate beats, and have students sing or chant the sequence back to them in their pair. This was repeated multiple times: (a) as a group (including the researcher); (b) then the students without the researcher; and (c) finally each student individually.

The provision of specific tones and rhythms was necessary when teaching students the songs to develop their tonal and rhythmic vocabularies and audiation abilities and in turn assist oracy development. As outlined by Gordon (2007), the tonal and rhythm content learning sequences both have multiple levels that students progressively work through from simple to complex as they develop musicality and audiation skills. In line with these learning sequences, the specific tones focused on throughout the intervention were at the most elementary level - major and harmonic
minor tonalities. The first level was also used when developing students’ rhythm vocabularies which included the use and development of usual duple and triple meters with macro and microbeat functions from the rhythm content learning sequence. Using these simple tones and rhythms were important as they are the foundation for building students’ tonal and rhythmical vocabularies and further reflected the beginning levels for students’ musicality and thus audiation.

**Learning each song**

Once students had learned the selected tonal or rhythmic sequence for that lesson, they would then learn each short song. This was conducted in multiple steps:

1. Speak the first line and have students repeat it as a group as necessary.
2. Then speak the next line and have students repeat it as a group as necessary.
3. Speak the first two lines together and have students repeat it as a group as necessary.
4. Repeat steps 1 – 3 inclusive for the lines three and four of the song.
5. Students speak the whole song (four lines) with the researcher, and then as a group without the researcher.
6. Once the words of the song have been taught to students, repeat steps 1 to 5 inclusive but singing the song with the aid of the ‘Real Piano’ smart phone application.
7. Students sing the entire song individually with assistance from the researcher where necessary (e.g.: prompting of lyrics).

It must be noted that students are all individuals and learn differently, which was reflected, to some extent, within each intervention lesson. Instances throughout each session conducted would slightly change depending on the group and their learning
needs on that particular day – time spent learning the tonal/rhythmic sequence, the words and/or the entire song, and the number of times they would sing as a group or individually. This differentiation was only minor for each of the randomly paired participants. It concerned some initial instances of asking students to sing aloud if they were too shy to sing at all, whether it be as a group, with their peer, or individually, and the repetition of tonal and rhythmic phrases to ensure accuracy. As the intervention progressed, some students became more confident and were asking to sing or chant particular patterns or lyrics individually to demonstrate their abilities, so this interest was harnessed and encouraged by the research if they requested. Taggart et al. (2000, p. xxv) support this need to provide students with opportunities to sing solo, as they believe that it is only when students perform alone that they “gain a full understanding of their own performances,” thus leading to the development of audiation. All requirements for lessons were completed within the allotted time frame, in which all students were exposed to and engaged with unless they were absent from school on that particular day.

3.6 ETHICAL CONSIDERATIONS

Ethical clearance from Griffith University (GU) was obtained (EDN/50/14/HREC), and the research project was conducted in line with the human ethics manual in regards to voluntary participation and consent forms, confidentiality, questions of a threatening or sensitive nature, data storage and security, as well as the anticipated outcomes of the research project.

3.6.1 VOLUNTARY PARTICIPATION AND INFORMED CONSENT

All potential participants were informed that their participation in this research study was entirely voluntary, and they had the right to withdraw or elect not to participate in
this study without consequence. An information letter was provided to all participants (headmaster, staff, parents/guardians, and students), and outlined sufficient information in regards to:

- the nature and purpose of the overall study;
- details of how data was to be collected;
- who would be collecting the necessary data and contact details if any questions arose; and
- the voluntary nature of the project.

As student participants within this study were underage, a parent or guardian needed to consent to this research, understanding that participation within this project could be withdrawn at any stage without explanation or consequence. Consent forms were provided to the school/institution, IEC staff members, and parent or guardian of each potential participant, and adhered to the ethics protocols outlined by Griffith University.

3.6.2 CONFIDENTIALITY

Throughout this research, no institution or individual were identified, and participants were assured of this. Pseudonyms have been used where applicable to retain anonymity of both individuals and the institution. If findings are presented at a conference or published in print, the institution and voluntary participants have been assured that their anonymity will be maintained through de-identification through use of pseudonyms.

3.6.3 DATA STORAGE AND SECURITY

As per the requirements stipulated in ethics policies, all data was stored in a secure location. All computer documents, videos, voice recordings, and analysis
results were stored on the researcher’s computer under password protection. Furthermore, all hard copy, paper documentation – anecdotal notes, observations, EAL/D assessments from the case site – were categorised into folders and stored in a locked filing cabinet in the researcher’s secured office. Data will be destroyed after five years.

3.7 CONTEXT

Broadwater State School (pseudonym used) promote themselves as being a diverse and multicultural school, with the student body comprising of over 50 nationalities (DET, 2015). Of the student population, it was recorded that 30% were born overseas, in which 5.3% of the population were refugees (DET, 2015). It was calculated that 26% of the student population at Broadwater State School received EAL/D support, in which 5% of students attended the Intensive English Centre (IEC) (DET, 2015). In 2014, 53% of the student population had English as a second language (DET, 2014); however, it is not outlined in the 2015 Broadwater State School Annual Report (DET, 2015). It is unknown why Broadwater State School attracts a large proportion of students who have English as an additional language or dialect. It is a publicly funded school where there are no school fees, which may make it attractive to families who have immigrated to Australia. Further, the facilities and specific programs available to assist in the development of students’ English proficiency at this school may be why this school has a large population of students with EAL/D. Broadwater State School is renowned on the Gold Coast for its excellence in providing an appropriate educational environment for learners with English as an Additional Language with the provision of an Intensive English Centre (IEC). This centre serves students in Years 1 to 7 who have been assessed and diagnosed as exhibiting limited English skills in the areas of speaking, reading and/or writing. The
necessary teaching and learning, and staff to assist in the development of students’
English language skills which will eventually enable them to be fully integrated into a
mainstream classroom(s) within the school is provided. This research site was
deemed the most appropriate for this study based on their status as a leading school
on the Gold Coast for educating students with English as an additional language or
dialect (EAL/D). As my intervention targeted students with EAL/D, the high proportion
of such students attending this school was a further reason for its selection as a case
site for research.

As staff members employed in the IEC are specialists within this particular field,
any language behaviours observed and reported through semi-structured interviews
could be deemed reliable evidence as they have an understanding of typical language
behaviours displayed by students with EAL/D. Further, they would be more aware of
the subtleties and potential changes in students’ language abilities. The familiar nature
of this context for students assisted in the maintenance of a safe and supportive
environment. With this support, it was expected that students would feel more
comfortable when learning from someone with whom they were not familiar, the
research for example.

3.8 RECRUITMENT AND PARTICIPANTS

Participants in this study included students, students’ IEC teacher,
parents/guardians, and myself. Students engaged and participated in the eight-week
music intervention, while their IEC teacher provided perceptions of their oracy
development pre- and post-intervention. Students’ parents participated in a one-off
interview prior to the commencement of the intervention to provide some background
information on their child participating in my research. I not only acted as a researcher
in this study, but the teacher of the eight-week music intervention. This research study employed the purposive sampling strategy of criterion sampling, in order to recruit both student and staff participants. This type of sampling delineated certain characteristics that were desired of participants for this study (include reference).

The staff participants included one staff member from the IEC facility. One staff member was currently employed within the mixed Year 1/2 Intensive English Centre (IEC) facility, and as a teaching staff participant within this study, they were provided with consent forms to sign, indicating that they agreed to the terms of the research and what was required of them throughout the research process. Their selection for involvement was another example of criterion sampling; however, the only inclusion criteria that was expected for them was that they teach and interact with the eight participants within the IEC on a regular basis. The staff member from the case site will be referred to as Mrs X throughout the remainder of this thesis.

In consultation with Mrs X from the IEC, the provision of the inclusion criterion for the student participants were provided (Table 16).

Table 16

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Description/Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Student will be either six, seven or eight years old.</td>
</tr>
<tr>
<td>Year Level</td>
<td>Student will be in Year One or Two throughout the duration of initial data collection, progressing into Year Two or Three when a follow-up data collection occurs.</td>
</tr>
<tr>
<td>English speaking ability</td>
<td>Diagnosed as possessing limited speaking ability by the specialist teachers at the Intensive English Centre at the research site.</td>
</tr>
<tr>
<td>Sociocultural background</td>
<td>Student is from a sociocultural background in which English is not the mother tongue of that country or region.</td>
</tr>
</tbody>
</table>
The sampling strategy aligned with the chosen SSED methodology as participant variables needed to be controlled as much as humanly possible in order to effectively answer the research questions.

After identifying 12 potential student participants, Mrs X and the researcher approached the parents or guardians of these students individually to explain the project, and distributed consent forms with a written explanation of the research project attached as per ethical clearance. Where necessary, a translator was provided to ensure students’ parents/guardians understood the study’s intentions, propositions, and requirements so all parties were aware and informed of what was being agreed to. After approaching 12 parents/guardians, six (6) agreed for their children to participate. It was unknown why the other parents/guardians did not agree to letting their child participate in the intervention, and this matter was not pressed given the voluntary nature of participation. Table 17 provides the details of the six participating students.

Table 17

<table>
<thead>
<tr>
<th>Participant</th>
<th>Gender</th>
<th>Age (years; months)</th>
<th>Year Level</th>
<th>Language</th>
<th>Arrival to country (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abraham</td>
<td>Male</td>
<td>7;6</td>
<td>1</td>
<td>Arabic</td>
<td>11</td>
</tr>
<tr>
<td>Alex</td>
<td>Male</td>
<td>6;4</td>
<td>1</td>
<td>Arabic</td>
<td>6</td>
</tr>
<tr>
<td>Ashleigh</td>
<td>Female</td>
<td>8;6</td>
<td>2</td>
<td>Tigrinya</td>
<td>7</td>
</tr>
<tr>
<td>Marcus</td>
<td>Male</td>
<td>7;11</td>
<td>2</td>
<td>Arabic</td>
<td>0</td>
</tr>
<tr>
<td>Megan</td>
<td>Female</td>
<td>6;11</td>
<td>1</td>
<td>Russian</td>
<td>8</td>
</tr>
<tr>
<td>Michael</td>
<td>Male</td>
<td>6;6</td>
<td>1</td>
<td>Bengali</td>
<td>8</td>
</tr>
</tbody>
</table>

As outlined in Table 17, the six students for whom parental or guardian consent was given comprised of two (2) female and four (4) male students. Four were in Year 1 at the commencement of data collection, and the other two participants were in Year 2. The age at the start of data collection ranged from 6 years 4 months, to 8 years 6
months, thus providing a difference of 2 years and 2 months between the youngest and eldest participant. This was important to note because despite student data being analysed and reported on individually, thus adhering to the single-subject experimental design methodology, comparing the differences in individual results predicated upon student age could highlight important information that could be investigated in future research. Three students (Abraham, Alex, and Marcus) all had a native or first language of Arabic, and Ashleigh, Megan, and Michael all had different native languages - Tigrinya, Russian, and Bengali respectively. Students’ native language was important to consider in regards to whether it was tonal or atonal, and its effects on the development of their level of oracy. Additionally, Table 18 shows their arrival time in Australia or months living in an English-speaking country. This ranged from 11 months for Abraham to zero months for Marcus, who had only recently arrived in Australia. The length of time spent immersed in an English-speaking country was important to consider as it warranted pre-intervention scores for particular students, and potential effects the intervention had on their oral development.

3.9 DATA COLLECTION PLAN

Data was collected over a period of 20 weeks. Baseline data was collected in the pre-intervention phase A of the study, occurring over one week at the beginning of the fourth school term in the calendar year. The intervention was delivered straight after the collection of baseline data and for a period of eight weeks (intervention phase B), concluding with the follow-up maintenance which occurred ten weeks later. Figure 4 provides a graphic timeline representing the data collection methods, when it occurred and the participants involved. Data collection techniques used (and shown in Figure 3) included structured and semi-structured interviews, attainment of documents, audio
(voice) recordings, and the Primary Measures of Music Audiation (PMMA). Figure 3 also details the participants for whom data was collected.
**PRE-INTERVENTION (A)**

<table>
<thead>
<tr>
<th>Method</th>
<th>Participant</th>
<th>Measure(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi-structured interview</td>
<td>Staff (Mrs X)</td>
<td>• Verbal Fluency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prosody</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pronunciation</td>
</tr>
<tr>
<td>Audio voice recordings</td>
<td>Students</td>
<td>• Verbal Fluency (percent maze words)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prosody</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pronunciation</td>
</tr>
<tr>
<td>Primary Measures of Music Audiation</td>
<td>Students</td>
<td>• Musicality</td>
</tr>
<tr>
<td>EAL/D Bandscales</td>
<td>Students</td>
<td>• English speaking proficiency</td>
</tr>
<tr>
<td>Structured interview</td>
<td>Parents/guardians</td>
<td>• Previous exposure to English and music</td>
</tr>
</tbody>
</table>

**INTERVENTION (B)**

<table>
<thead>
<tr>
<th>Method</th>
<th>Participant</th>
<th>Measure(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio voice recordings</td>
<td>Students</td>
<td>• Verbal Fluency (percent maze words)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prosody</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pronunciation</td>
</tr>
<tr>
<td>Observations and anecdotal notes</td>
<td>Myself (researcher)</td>
<td>• Musicality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Participation and engagement</td>
</tr>
</tbody>
</table>

**FOLLOW-UP MAINTENANCE**

<table>
<thead>
<tr>
<th>Method</th>
<th>Participant</th>
<th>Measure(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi-structured interview</td>
<td>Staff (Mrs X)</td>
<td>• Verbal Fluency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prosody</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pronunciation</td>
</tr>
<tr>
<td>Audio voice recordings</td>
<td>Students</td>
<td>• Verbal Fluency (percent maze words)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prosody</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pronunciation</td>
</tr>
<tr>
<td>Primary Measures of Music Audiation</td>
<td>Students</td>
<td>• Musicality</td>
</tr>
<tr>
<td>EAL/D Bandscales</td>
<td>Students</td>
<td>• English speaking proficiency</td>
</tr>
</tbody>
</table>

*Figure 3. Outline of data collection plan for this study.*
Each phase of the study (pre-intervention, intervention, and follow-up maintenance phase) is discussed in further detail hereafter.

**Pre-intervention (Phase A)**

Figure 4 shows the involvement of three participant types, students, parents, and one staff member. Each participant was involved at different stages during the research study. Pre-intervention data for students occurred over a period of four days. Each day, the researcher collected a spontaneous speech sample from each student participant using a digital voice recorder. Students were asked an open-ended question – “*what did you do yesterday?*” This question acted as the control measure throughout the research study as it enabled students to verbally relay a past experience in as much or little detail as they wanted to. This was done in a natural communicative setting without set criteria for them to fulfil. Day one of pre-intervention data collection involved students taking a computer generated test known as the Primary Measures of Music Audiation (PMMA). This test consisted of two 20-minute sub-tests (tonal and rhythm) to assess all students’ current musical aptitude.

Pre-intervention data collection for parents involved one structured interview where they were asked questions about their child’s speaking behaviours in their native language as well as exposure to and engagement with music and musical experiences. The staff participant (Mrs X) provided the researcher with ratings from Education Queensland’s (2017) Bandscales State Schools (Queensland) for EAL/D learners for each individual participant across macro skills of speaking and listening, as they were the only skills currently of relevance to this study. Additionally, semi-structured interviews were conducted with Mrs X in regards to the speaking behaviours of each individual student participant prior to their engagement in the music
intervention. All interviews conducted with parents and staff were recorded using a
digital voice recorder.

The pre-intervention data allowed for a snapshot of students’ language
proficiency in both their native language and English, as well as their level of musicality
and exposure to music outside of the classroom environment to be taken.

**Intervention Phase (Phase B)**

The music intervention was conducted over a period of eight weeks during the
school calendar term four. Throughout the eight weeks, the intervention was taught by
myself three times a week, with each lesson approximately 30 minutes in length. In
total, there were 24 lessons and approximately 12 hours of participation in the music
intervention. During and throughout each lesson, the researcher made observation
notes in regards to students’ musicality development, particularly in relation to their
tonal and rhythmic abilities. An observation checklist was created based on previous
research in this area (McCormack & Klopper, 2016). This enabled additional notes to
be included by the researcher in regards to a particular behaviour that was not initially
considered and could be reflected upon during the analysis phase [see Appendix B].
Each week, on the day of the first lesson of each week and prior to the intervention
lesson was taught; the control question was asked of students individually. This
provided the spontaneous speech sample to analyse in relation to the development of
students’ oracy skills, in particular their verbal fluency, prosody, and pronunciation.
This data was triangulated with the post-intervention semi-structured interviews
conducted with the IEC staff participant (Mrs X) at the conclusion of the eight-week
music intervention.
Follow-up maintenance phase

Data for this phase was collected 10 weeks after the conclusion of the music intervention and served as a test for maintenance of the oracy skills targeted and developed over the course of the eight-week intervention (verbal fluency, prosody, and pronunciation). Post-intervention data was collected over a period of three days during which students, again provided a spontaneous speech sample using the control question to explore any development in oracy skills. All students were asked to re-take the two PMMA sub-tests (tonal and rhythm) to determine if there were any changes in their level of musicality in these areas.

Post-intervention data was collected from the staff participant, Mrs X. This involved a semi-structured interview about each individual student’s speaking behaviours after the intervention had concluded. All questions were the same as those asked during the pre-intervention interview, with the inclusion of one extra question to gauge her opinion in regards to if the music intervention assisted in the development of the participants’ speaking behaviours. Additionally, Mrs X. used the EAL/D Bandscales (Education Queensland, 2017) to individually rate the student participants in order to determine if the change occurred in the skills of speaking and listening after their participation in the eight-week music intervention.

3.10 DATA COLLECTION METHODS

In the following section, I provide a rationale for the various data collection tools used in this study.

3.10.1 STRUCTURED INTERVIEW

Structured interviews were conducted with the parents/guardians of all student participants to gain insight into their cultural background and language learning
development and experiences in their native language. The kind of language a child chooses to use is ultimately shaped by their culture and interaction with their families (Emmitt, Komesaroff, & Pollock, 2006). It was deemed fundamental to source what language is used in each participant’s home environment, as well as the degree to which participants had been or are exposed to the English language outside the context of school. Furthermore, certain questions in this interview were also included to ascertain the music/musical experiences the student is exposed to outside of the school environment.

One structured interview was conducted with a guardian of each student participant prior to the commencement of the intervention; in some cases, both parents were willing to attend the interview. Each structured interview lasted 10 minutes, and explored English language usage and exposure, and music/musical experiences within their home environment. Each interview was recorded using a digital voice recorder, and the researcher in response to each question also made written notes. Only one parent of a student participant was identified by the staff participant as requiring a translator and in this case, a translator the school often uses was contacted and contracted to attend the structured interview with the student participant’s parent.

3.10.2 SEMI-STRUCTURED INTERVIEW

Two semi-structured interviews were conducted with the specialist staff from the Intensive English Centre (IEC) during the study, acting as a pre- and post-intervention interview. A semi-structured approach to interviews was valuable as it allowed the researcher to have set questions pre-planned to elicit the necessary data, but also enabled the interviewee to reveal information that may not have been considered prior to data collection and may be of relevance to the research project. Set questions were in relation to each participants’ verbal fluency, prosody of speech, pronunciation,
initiation of conversation, sentence complexity, and quality of response to questions (is it meaningful and relevant), and staff were further encouraged to identify any other changes they have noticed in participants, such as: confidence, motivation, and/or social relationships. All interviews were voice recorded and then transcribed for ease when analysing and triangulating data. As Mrs X. is a specialist EAL/D teacher within the IEC and teaches and interacts with these students on a daily basis, what may be considered subjective qualitative evidence could be deemed reliable as her years of experience in assessing and identifying language behaviours within students, and recognising what is expected of them at particular levels and ages was recognised as extensive and credible.

3.10.3 DOCUMENT COLLECTION

The Bandscales State Schools (Queensland) for EAL/D learners (Education Queensland, 2017) were used to provide further evidence students’ oracy development. This particular document is typically used in Queensland schools to assess students with EAL/D across the four skills of listening, speaking, reading, and writing. Consequently, Mrs X used this document twice during this research (pre- and post-intervention) to assess student participants’ speaking and listening skills only, as they were the skills of relevance to this research. As Mrs X volunteered students’ EAL/D Bandscale ratings in the semi-structured interviews, this was further discussed with Mrs X pre- and post-intervention before the researcher accessed the same bandscales online. This document provided descriptive data in regards to students’ speaking and listening skills in the English language on an official document complied and outlined by Education Queensland (2017).
3.10.4 AUDIO RECORDINGS

To assess the potential effects of the intervention on the development of oracy in students with EAL/D, voice recordings were collected at the same time and place every week throughout baseline, intervention, and follow-up phases. These enabled participants to verbally relay a past experience in a natural communicative setting without prescribed criteria in which they had to fulfil, and the ability for their true, every day and spontaneous speech to be collected and analysed. If required, to some extent, the researcher prompted participants by asking: (a) if they remembered anything else about their day; (b) if there was anything else they wanted to say; or (c) if that was all they had to say. This enabled the students to continue talking or end the conversation. This audio recording occurred four times pre-intervention, once a week for eight weeks throughout the intervention, and three times post-intervention.

3.10.5 OBSERVATIONS AND ANECDOTAL NOTES

Observations of students occurred three times a week throughout the intervention lessons. From these observations, the researcher recorded anecdotal notes on a prepared document in which a separate document was used for each pair. While primarily informed by results from previous research in a similar area (McCormack & Klopper, 2016), this document was also informed by the specific elements highlighted in the research sub-questions – the fluency, prosody, pronunciation, and musicality of students with EAL/D. Observations were supported by audio recordings, and allowed for triangulation during the analysis phase. Measures that were identified by the researcher and required observation throughout each lesson were students’ tonal and rhythmic competence.
3.10.6 THE PRIMARY MEASURES OF MUSIC AUDIATION (PMMA)

The Primary Measures of Music Audiation (PMMA) involves two separate computer generated tests in regards to tonal and rhythmic patterning. This is a computer generated test designed by Gordon (1979) to assess the musical aptitude of students from Prep to Year 3 inclusive, in which there are no requirements for participants to have had formal music training or language skills to be able to partake in this assessment. The PMMA only tests for the measures of tonal and rhythmic patterning, in which the previous chapter’s literature review outlined as being elements necessary not only for music, but also speech. There are two subtests that consist of 80 pairs of music stimuli, and focus on two fundamental musical parameters; one test consists of 40 short tonal patterns that are void of rhythm, and the second is a rhythmic test in which 40 short patterns are void of melody (Colwell & Abrahams, 1991). Within each subtest, students are provided with two musical examples and are required to identify whether the two examples heard are similar or different by clicking the corresponding button on the computer screen.

It has been claimed that the use of the Primary Measures of Music Audiation (PMMA) may be problematic when administering this test to students from other countries and cultures, as “research findings based upon one culture cannot safely be assumed to apply to other cultures” (LeBlanc, Jin, Stamou, & McCrary, 1999, p. 76). Several other researchers have conducted investigations in regards to how the PMMA translates in various countries and cultures (Lee, 2010; Ji, 2012; Stamou, Schmidt, & Humphreys, 2010). The results of each of these studies affirmed a level of acceptability and appropriateness of the PMMA test as it has been used throughout a range of different countries and cultures, with some results being higher than others. Consequently, this informed this research as the PMMA is underscored as an
appropriate method to have employed to assess students’ musical aptitude regardless of cultural background. Furthermore, this research includes participants from a variety of countries and cultures, and results will add to the growing evidence supporting the validity of Gordon’s PMMA (1979) computer generated test in identifying musicality of young children.

The learning sequences for audiation develop tonal and rhythmic patterns, and they resemble one’s ability to think in a language as sounds are heard in the mind like words and sentences before they are produced. While this research drew upon these principles of audiation to investigate the effects of the music intervention on the level of oracy of students with EAL/D, it was possible that students’ musical aptitude increased as well.

Each student participant undertook this test twice during the data collection phase as a pre- and post-test. Students sat in front of a computer screen and completed the quizzes to assess their interpretations of tonal and rhythmic patterns, and their ability to identify similarities and differences between them. Principles of audiation were delivered via a musical intervention to develop oracy; however, some students with EAL/D may be innately musical or engage in musical experiences outside of the school context. It could be suggested that they may demonstrate greater improvement in their verbal fluency, prosody, and pronunciation because of this. Instruction via a musical medium may advance students’ level of oracy, and this test served as a means to investigate if there was a parallel between the results of their music performance and level of oracy.
3.11 DATA ANALYSIS

Data analysis included both qualitative and quantitative measures to provide evidence for the effects of the music intervention on the development of oracy (verbal fluency, prosody, and pronunciation) in students with English as an additional language or dialect (EAL/D). Measures throughout this process included thematic analysis, the Student Oral Language Observation matrix (SOLOM), English as an additional language or dialect (EAL/D) rating scales, and triangulation of the data. The Systematic Analysis of Language Transcripts New Zealand and Australia ([SALT-NZAU] Miller et al., 2016) was used to generate measures for verbal fluency that could then be triangulated with other data sets. An explanation of each process is explained hereafter and how they were employed in this study.

3.11.1 THEMATIC ANALYSIS

A thematic analysis approach was applied to qualitative data collected throughout this research project. Thematic analysis involves the searching and identification of themes within a qualitative data set through the process of analysing the commonalities, relationships, and differences within (Gibson & Brown, 2009). Prior to data analysis, an a priori of themes or codes were generated based on previous research (McCormack & Klopper, 2016) and a review of literature pertaining to the development of verbal fluency, prosody, and pronunciation as a result of music intervention (Gan & Chong, 1998; Fonseca-Mora et al., 2011; Patel & Daniele, 2003; Richards, 1975; Saricoban & Metin, 2000; Schoepp, 2001; Tanaka & Takano, 2000). Two of five areas assessed on the Student Oral Language Observation Matrix (California Department of Education, 1981) are fluency and pronunciation, providing further support for the use of these as themes. The identification of themes shaped the preliminary classification of data (Gibson & Brown, 2009). The semi-structured
interviews conducted with the staff participant were transcribed by the researcher and analysed for repetitions – key words, phrases, or concepts that reoccurred throughout the data transcripts.

McMillan and Schumacher (2010) emphasised the demanding nature of pattern seeking and detecting such relationships, as the data collected requires thorough examination so as to assist the researcher in identifying how the data can illuminate the research problem. Thematic analysis focused on the identification and description of implicit and explicit ideas within the semi-structured interviews rather than the counting of specific reoccurrence of words and/or phrases within the data collected (Guest, Namey, & Mitchell, 2012).

3.11.2 STUDENT ORAL LANGUAGE OBSERVATION MATRIX (SOLOM)

The SOLOM is a matrix that assesses the oral language of students across five domains: comprehension, vocabulary, fluency, grammar, and pronunciation. Used in Fisher’s (2001) study of language achievement in students with ESL, SOLOM is defined by the California Department of Education (1981) for assessing students’ proficiency and command of English oral language (Appendix C). Some of these domains within SOLOM were oracy skills under investigation within this research, thus deemed appropriate to use as a tool to analyse students’ spontaneous speech samples.

Prosody in the spoken language is important in conveying and expressing meaning and emotions as it involves variations in pitch, stress, and rhythm (Monrad-Krohn, 1957). As conducted in Samuelsson’s (2011) study, prosodic characteristics of speech were evaluated and analysed through the collection of spontaneous speech
samples that were provided to a panel of three qualified and experienced speech-language therapists. For this research study, the SOLOM was employed to assess the verbal fluency and pronunciation of students’ spontaneous speech samples. Six (6) independent raters, three representing speech-language pathology and three from the teaching/education profession who had not been involved in this research project, were asked to listen and conduct a blind analysis of de-identified student voice recordings using the Student Oral Language Observation Matrix (SOLOM) so as to evaluate the prosodic features that are evident (or lacking) within each. Raters were asked to highlight within the matrix where they believed the level each individual student was at in terms of comprehension, fluency, vocabulary, pronunciation, and grammar. This method provided additional information in regards to listeners’ ability to identify changes in the performance of the student participants with EAL/D.

Although multiple voice recordings were collected throughout the duration of the study, the three certified speech-language pathologists and three qualified educators were only provided with 16 spontaneous speech samples in total: two for each participant representing pre- and post-intervention. These spontaneous speech samples were the audio voice recordings collected weekly from all student participants. They were responses to the open-ended question asked by the researcher that reflected their everyday speech and language within a natural communicative setting in which there was no prescribed criteria to fulfil with their verbal response.

Voice recordings were labelled as 1 to 16 and randomised. They were not provided to the independent raters in order of collection or in student groupings, so as to gain a true understanding and representation of fluency, prosody, and pronunciation.
of speech for each participant. Only the researcher knew the identity and time of collection for each voice recording.

3.11.3 EAL/D RATING SCALES

Employing a similar approach to that of the SOLOM, the 16 student spontaneous speech samples were also assessed for intelligibility, prosody, and pronunciation on the ‘English as an additional language or dialect Rating Scales’ (Appendix D). This rating scale was created by the researcher because the SOLOM did not assess intelligibility or prosody of student utterances which are elements being investigated in this research. Pronunciation was included on this scale as it provided a more in-depth description of what was to be investigated. These speech samples were the same 16 that were rated using the Student Oral Language Observation Matrix (SOLOM), and the same three certified speech-language pathologists and three registered teachers were used.

3.11.4 SYSTEMATIC ANALYSIS OF LANGUAGE TRANSCRIPTS – AUSTRALIA AND NEW ZEALAND (SALT-NZAU)

To obtain measures related to students’ verbal fluency, all speech samples were transcribed and coded by the researcher using the computer software program entitled Systematic Analysis of Language Transcripts New Zealand and Australia (Miller et al., 2016). SALT-NZAU is a software tool typically used by speech-language pathologists and educators to “document language development in typical children, children with development disabilities, and children learning English as a second language” (University of Wisconsin, 2014, para. 1). Through the use of SALT-NZAU (Miller et al., 2016), transcripts could be analysed for mazing behaviour. Mazing behaviour in speech is defined by Loban (1976) as “a series of words, initial parts of words or
unattached fragments which do not contribute meaning to the ongoing flow of language.” SALT-NZAU generates the percentage of percent maze words from the coding of the transcripts. Starkweather (1987) notes that as children mature, their speech, in their native language, naturally becomes fluent. However, Leadholm and Miller (1995) indicate mazes manifest in one’s speech when “they are expressing an idea that is abstract, complicated or not yet fully developed.” Calculation and computation of mazing behaviour in one’s speech yields measures of the participants’ linguistic uncertainty (Loban, 1976). deJoy and Gregory (1985) and Starkweather (1987) highlighted that the mazing behaviours of filled pauses and repetitions are evident in the speech of all individuals to some extent (Table 18).

Table 18

Maze types and descriptions of what will be recorded and analysed for baseline behaviour

<table>
<thead>
<tr>
<th>Maze Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filled pause</td>
<td>Nonlinguistic vocalisations that occur at the beginning of utterances or between words</td>
</tr>
<tr>
<td>Repetition</td>
<td>Sound, part-word, whole-word, or phrase repetition.</td>
</tr>
</tbody>
</table>


Filled pauses and repetitions were the two mazing behaviours targeted for students’ verbal fluency in this research, as they would be evident in all participants to varying degrees given their individual linguistic uncertainty being students for whom English is not their native or first language.

The number of words and mean length of utterances (MLU) in words were derived from coding the transcripts in order to determine verbal productivity and sentence complexity respectively. These two measures would not specifically reflect verbal fluency, but represent other factors that could impede it. Crystal’s (1987) ‘bucket theory’ reflects this whereby proposing that an increase in a particular language area may result in a ‘spillage’ (or decrease) of a skill or skills in another area. Therefore,
students’ willingness to speak more words and attempting to use more complex sentences (MLU) could result in increased mazing behaviour, and thus reflect lack of improvement to students’ verbal fluency.

Transcriptions of all student speech samples were segmented into C-Units. This means that sentences consisted of an independent clause that included all its modifiers (SALT, n.d.). Sentences including “one main clause with all subordinate clauses attached to it,” indicated that the sentence could not be divided further without losing its essential meaning (SALT, n.d., p. 1). Segmenting using C-Units enabled the verbal productivity (total utterances) and sentence complexity (MLU in words) for all student participants to be analysed and reported on. Examples of coded transcripts are provided (Appendices E - H).

Despite utilising a single-subject experimental design, differences in mazing behaviour could be investigated across participants after individual analysis if desired, as Leadholm and Miller (1995) highlight that the “frequency of mazes increases with age, rather than decreases as one might expect” (p. 39). Numerical data was produced for baseline establishment that has been visually presented in graph format when reporting on and discussing the data in Chapter 5 of this thesis.

**Transcription accuracy and coding reliability**

To ensure the reliability of transcription and coding of all participants’ audio voice recordings, the following procedure was used. The researcher listened to the spontaneous speech samples produced by the six student participants who have English as an additional language or dialect and then transcribed using the SALT-NZAU (Miller et al., 2016). A random selection of 20% of the transcripts along with their corresponding spontaneous speech sample recording were sent to an
independent researcher experienced using SALT-NZAU (Miller et al., 2016) to check for the accuracy of transcription for utterance segmentation and coding of mazes. To document the level of agreement between the two raters and the reliability of transcription and coding of the spontaneous speech samples, Krippendorf alpha coefficients (Krippendorf, 1980) were calculated. For this research, Krippendorf’s alpha using ordinal scaling for ‘utterance segmentation’, ‘mazing’, ‘total number of utterances’, and ‘MLU in words’. The levels of agreement are presented in Table 19.

Table 19

<table>
<thead>
<tr>
<th>Element checked</th>
<th>Score</th>
<th>Level of agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utterance segmentation</td>
<td>0.987</td>
<td>Strong</td>
</tr>
<tr>
<td>Mazing</td>
<td>0.998</td>
<td>Strong</td>
</tr>
<tr>
<td>Total number of utterances</td>
<td>0.775</td>
<td>Adequate</td>
</tr>
<tr>
<td>MLU in words</td>
<td>0.948</td>
<td>Strong</td>
</tr>
</tbody>
</table>

Table 19 shows that there were strong levels of agreement between raters for the transcription and coding for ‘utterance segmentation’, ‘mazing’, and ‘MLU in words’. Despite an adequate rating was given for the ‘total number of utterances’, however, tentative conclusions can still be drawn from the data.

3.11.5 TRIANGULATION

Triangulation of data was used to ensure validity and reliability. Through the triangulation process, it was anticipated that causal relationship could be identified, along with emergent themes and patterns, which contributed to answering the research question and associated sub-questions. This did occur in multiple data sets which supported claims being made about the development of oracy in students with EAL/D. Additional themes and patterns were also identified: increased student confidence, motivation, and engagement; improved comprehension, vocabulary, and
grammar; and the facilitation of relationships with students in the IEC and native English-speakers.

The triangulation process occurred between the SOLOM, the EAL/D Rating Scales, and interviews with the staff participant in regards to the potential development of verbal fluency, prosody, and pronunciation as a result of students’ engagement with and participation in the music intervention. Additionally, the results obtained in regards to mazing behaviour from SALT-NZAU (Miller et al., 2016) were also triangulated, although, only in the area of verbal fluency.

3.12 CHAPTER SUMMARY

Chapter three outlined the methodology employed for this research, as well as described the intervention that was implemented and explained the data collection plan. Figure 3 illustrated how the pragmatic paradigm framed and supported the use of a single-subject experimental design that applied the music intervention based on principles of audiation from Gordon’s Music Learning Theory to develop oracy skills (verbal fluency, prosody, and pronunciation) in students with EAL/D.

Quantitative and qualitative baseline data (A) was collected and analysed from students, parents/guardians, and the IEC staff member (Mrs X) to help determine the oracy skills students possessed when speaking in English prior to their participation in the music intervention. Further information about students’ linguistic background in their native language and musicality was also provided by the parents as it may explain potential score outliers during the pre-intervention phase. The intervention phase (B) had students participate in the music intervention taught by me (the researcher) three times a week for eight weeks. Data collection involved students (spontaneous speech samples) and the researcher (observation notes). The inclusion of a follow-up phase
investigated the maintenance effects of the music intervention on all students’ oracy skills (verbal fluency, prosody, and pronunciation) 10 weeks after the removal of the intervention. Data collection employed the same quantitative and qualitative techniques used during phases A and B, and involved students, parents/guardians, and the IEC staff member (Mrs X).

This chapter also discussed the methods and techniques for data collection and analysis, in which it was revealed that not only would qualitative data be produced, but also quantitative. The students’ voice recordings throughout the three phases (A-B and follow-up) were transcribed, coded, and analysed in the computer program SALT-NZAU (Miller et al., 2016) to provide the quantitative data to support or refute the qualitative data presented in regards to the development of oracy (verbal fluency, prosody, and pronunciation) in students who have English as an additional language or dialect (EAL/D). This thesis now progresses to the presentation of data collected throughout the research study to answer the research questions.
4

EFFECTS OF A MUSIC INTERVENTION ON THE MUSICALITY OF STUDENTS WITH ENGLISH AS AN ADDITIONAL LANGUAGE OR DIALECT

4.1 INTRODUCTION

Chapter Four presents and discusses the data collected for each of the student participants in this study in regards to the effects of the music intervention on their level of musicality. The quantitative data from the PMMA reports the pre- and post-intervention results, as well as follow-up results 10 weeks after the intervention finished in order to investigate the maintenance effects of the intervention. Furthermore, researcher observations are provided for the development of student musicality throughout their participation in the eight-week music intervention. This data assists in answering one the second research question: What is the effect of this music intervention on musicality for students with English as an additional language or dialect?

4.2 PRIMARY MEASURES OF MUSIC AUDIATION (PMMA)

Gordon’s Music Learning Theory (2010) focuses on the development of one’s ability to audiate. The development of this skill was evident in all student participants throughout and at the conclusion of the eight-week intervention apparent from the
observations of the intervention lessons and the completed Primary Measures of Music Audiation (PMMA) computer generated test scores.

The PMMA results have been provided in Table 20 and feature the scores achieved by all students pre- and post-intervention. The results include a raw score out of 40 for each tonal and rhythmic test, the percentile score calculated by the PMMA program based upon the raw score(s) achieved by the student, as well as a ranking based upon the percentile score(s) achieved for both tonal and rhythm. The raw score reflects the total number of items a student got correct out of 40 (raw score), as well as their percentile score is calculated by the PMMA based upon their raw score, highlighting the percentile the student falls into. Reflecting the single-subject experimental design (SSED) methodology, the results of the PMMA pre-, post-, and follow-up test will be discussed according to each individual participant.
Table 20

Primary Measures of Music Audiation (PMMA) participant results pre- and post-intervention

<table>
<thead>
<tr>
<th>Participant</th>
<th>Raw Scores</th>
<th>Percentile Scores</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ton Pre</td>
<td>Ton Post</td>
<td>Rhy Pre</td>
</tr>
<tr>
<td>Abraham</td>
<td>21</td>
<td>36</td>
<td>22</td>
</tr>
<tr>
<td>Alex</td>
<td>20</td>
<td>39</td>
<td>20</td>
</tr>
<tr>
<td>Ashleigh</td>
<td>26</td>
<td>38</td>
<td>26</td>
</tr>
<tr>
<td>Marcus</td>
<td>34</td>
<td>-</td>
<td>22</td>
</tr>
<tr>
<td>Megan</td>
<td>27</td>
<td>35</td>
<td>23</td>
</tr>
<tr>
<td>Michael</td>
<td>35</td>
<td>38</td>
<td>31</td>
</tr>
</tbody>
</table>

Notes: Percentile Scores: High = 80th and above; Average = 21st – 79th; and Low = 20th and below.
4.2.1 ABRAHAM

Abraham is a young boy who at the start of the intervention, was aged seven years and six months. At the time of the study, he was in Year 1 at Broadwater State School. His native language is Arabic – an atonal language. When the intervention commenced, Abraham had been living in Australia for 11 months, which was the longest duration out of all student participants in this research. Abraham did not partake in any private or specialist music lessons outside of the generalist lessons provided at school. No member of his family play a musical instrument; however, Abraham sometimes sings Arabic songs to himself at home, as well as English songs or jingles he may have been exposed to at school or in the wider community.

Primary Measures of Music Audiation (PMMA)

Abraham completed the PMMA computer generated test twice – prior to and immediately after his engagement with and participation in the intervention. His individual pre- and post-test results are reflected in Table 2.

Table 21
Abraham’s pre- and post-intervention PMMA scores after 8 weeks of the intervention

<table>
<thead>
<tr>
<th>Raw Scores</th>
<th>Percentile Scores</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ton Pre</td>
<td>Ton Post</td>
<td>Rhy Pre</td>
</tr>
<tr>
<td>21</td>
<td>36</td>
<td>22</td>
</tr>
</tbody>
</table>

Abraham’s PMMA scores prior to the intervention indicated a raw score of 21 for this tonal sub-test, and a 22 on the rhythm sub-test, placing him within the 10th and 27th percentiles respectively. From these percentile scores, the PMMA calculations rank Abraham’s tonal ability as low and his rhythmic as average. Post-intervention PMMA scores indicated a significant improvement in Abraham’s scores in both the tonal and rhythm sub-tests. Table 21 shows Abraham achieved a raw score of 36 for
both the tonal and rhythm sub-tests, placing him within the 92\textsuperscript{nd} and 98\textsuperscript{th} percentiles respectively and receiving a ranking of high according to PMMA calculations.

Table 22

\textit{Difference in Abraham’s pre- and post-intervention PMMA raw scores after 8 weeks of the intervention}

<table>
<thead>
<tr>
<th>Participant</th>
<th>Tonal</th>
<th>Rhythm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abraham</td>
<td>+15</td>
<td>+14</td>
</tr>
</tbody>
</table>

Table 22 outlines that Abraham improved his tonal and rhythmic abilities, by 15 points for the tonal sub-test, and 14 points for rhythm. This suggests that the eight-week intervention assisted in the development of and improvement in both Abraham’s tonal and rhythmic abilities, showing significant change that places him in the ‘high’ ranking for both.

He sat the PMMA test again 10 weeks later to assess maintenance of his improved levels of musicality. Table 23 outlines Abraham’s scores from the post-test immediately after the eight-week intervention, and the follow-up test administered 10 weeks later.

Table 23

\textit{Abraham’s post-intervention and follow-up (FU) PMMA scores after 10 weeks of no intervention}

<table>
<thead>
<tr>
<th>Raw Scores</th>
<th>Percentile Scores</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ton Post</td>
<td>Ton Post</td>
<td>Ton Post</td>
</tr>
<tr>
<td></td>
<td>Rhy FU</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>35</td>
<td>36</td>
</tr>
</tbody>
</table>

The rankings in Table 23 outline that 10 weeks after the intervention, Abraham maintained a ‘high’ for his tonal subtest, but lowered to an ‘average’ ranking for rhythm. Abraham’s raw score for the follow-up tonal subtest could be considered as maintained as it only decreased by one point. However, this resulted in a move from the 92\textsuperscript{nd} percentile to the 88\textsuperscript{th} percentile. His rhythmic ability, however, was not
maintained as his raw score on the subtest decreased from 36 to 30, showing a six-point reduction and moving from the 98th percentile to the 76th, achieving a ranking of average. Although Abraham’s raw score for the rhythm subtest decreased, it was still 8 points higher than his initial score prior to his engagement with and participation in the intervention. Additionally, Abraham’s tonal raw score for the follow-up remains 14 points higher than his pre-test despite the 1-point drop from post-intervention to follow-up.

From the interview conducted with Abraham’s parents, it was established that he did not engage in any formal music instruction or lessons other than those generalist lessons provided by the school for the whole class. Therefore, it is suggested that his participation in this intervention did assist in the development of his musicality.

4.2.2 ALEX

Alex is a Year 1 at Broadwater State School. He was six years and four months old when he first engaged in the intervention. Alex’s native language is Arabic – an atonal language. When the intervention commenced, Alex had only been living in Australia for six months. Alex had no formal music instruction other than the generalist music lessons provided at the case site for all students enrolled at the school. Neither Alex or any members of his family played a musical instrument; however, Alex apparently did like singing at home. Alex would occasionally ask his mother to listen to him sing the English songs he learned, but she would not let him, as she does not understand the content of the songs.
Primary Measures of Music Audiation (PMMA)

Table 24 presents Alex’s individual pre- and post-intervention PMMA test results.

Table 24
Alex’s pre- and post-intervention PMMA scores

<table>
<thead>
<tr>
<th>Raw Scores</th>
<th>Percentile Scores</th>
<th>Ranking</th>
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<tbody>
<tr>
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<tr>
<td>Ton Pre</td>
<td>Ton Post</td>
<td>Rhy Pre</td>
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<tr>
<td>Rhy Pre</td>
<td>Rhy Post</td>
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<td>20</td>
<td>39</td>
<td>20</td>
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<tr>
<td>7</td>
<td>99</td>
<td>17</td>
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</tbody>
</table>

Table 24 indicates that at pre-intervention Alex ranked low in both areas of tonal and rhythm. He achieved a raw score of 20 for both tonal and rhythm sub-tests, placing him in the 7th and 17th percentiles respectively. Post-intervention, Alex’s PMMA scores in both tonal and rhythm sub-tests improved significantly whereby he received a 39 (tonal) and 34 (rhythm). These scores placed him in the high ranking percentiles of 99th and 94th for his tonal and rhythmic abilities.

Table 25
Difference in Alex’s pre- and post-intervention PMMA scores

<table>
<thead>
<tr>
<th>Participant</th>
<th>Tonal</th>
<th>Rhythm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alex</td>
<td>+19</td>
<td>+14</td>
</tr>
</tbody>
</table>

Table 25 captures Alex's improvement in his raw scores, indicating that his tonal results improved by 19 points, and his rhythm results increased by 14 points. Such improvements suggest that Alex’s engagement with and participation in the eight-week intervention assisted in the development of his tonal and rhythmic abilities, with a move from a low to a high ranking.
Table 26 outlines how Alex maintained his high ranking for both the tonal and rhythm sub-tests 10 weeks after the intervention was removed. While it is noted that Alex's tonal raw score remained at a 39 from post-test to follow-up, his raw score for the rhythm sub-test was seen to increase slightly from 34 (post-test) to 36 (follow-up). Alex remained in the 99th percentile for his tonal ability, but moved from the 94th to the 98th percentile for his rhythm, indicating the maintenance and improvement in his musicality 10 weeks later. Significant improvements were noted when reflecting on Alex's pre-test scores and comparing them to the raw scores he achieved in the follow-up test. A 19-point increase occurred on the tonal sub-test, and a 16-point increase for the rhythm sub-test. These results indicate Alex's musicality improved from pre- to post-intervention. Follow-up results reveal his musicality continued to improve 10 weeks after the intervention was ceased. This suggests the potential of this music intervention based on Gordon's principles of audiation to have effects that are maintained and continue to improve student musicality after the intervention has been concluded.

It was revealed during the interview conducted with Alex's parents that he did not participate in any form of music training, instruction, or lessons outside of those general lessons provided for the whole class at the case site. Furthermore, his family did not sing to him at home or play any musical instruments. It is suggested that the

<table>
<thead>
<tr>
<th>Raw Scores</th>
<th>Percentile Scores</th>
<th>Ranking</th>
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<tbody>
<tr>
<td>Ton Post</td>
<td>Ton Post</td>
<td>Ton Post</td>
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<tr>
<td>39</td>
<td>39</td>
<td>99</td>
</tr>
<tr>
<td>Rhy Post</td>
<td>Rhy Post</td>
<td>Rhy Post</td>
</tr>
<tr>
<td>34</td>
<td>36</td>
<td>94</td>
</tr>
<tr>
<td>Rhy FU</td>
<td>Rhy FU</td>
<td>Rhy FU</td>
</tr>
<tr>
<td>36</td>
<td>36</td>
<td>98</td>
</tr>
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<td></td>
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<td>H</td>
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</tbody>
</table>
increase in Alex’s musicality was as a result of his engagement with and participation in the eight-week intervention.

4.2.3 ASHLEY

Ashleigh was aged eight years and six months and in Year 2 at Broadwater State School when the intervention commenced. Her native language is Tigrinya – an atonal language. Tigrinya is a Semitic language and one of the main working languages that is spoken by at least 50% of the Eritrean population (Eritrea.be, n.d.; Negash, 2016). The Tigrinya language comprises of over 200 characters and each has a different sound (Eritrea.be, n.d.). Ashleigh had been living in Australia for a total of seven months when she participated in the intervention. Ashleigh did not engage in any private or formal music lessons other than those provided by the case site for all students enrolled at the school. In her home country, Ashleigh attempted to learn guitar but did not like it and did not continue with it. None of her relatives play a musical instrument or sing. Ashleigh enjoyed music that has English lyrics, and was the only one in her home environment who would sing songs in both English and her native language (Tigrinya).

Primary Measures of Music Audiation (PMMA)

The PMMA scores (Table 27) for Ashleigh prior to the intervention show her scoring a raw score of 26 for both the tonal and rhythm sub-tests. These translated to her being calculated within the 17th (tonal) and 38th (rhythm) percentiles, in which she received rankings of low and average respectively. Post-intervention demonstrated significant improvements to Ashleigh’s tonal and rhythm scores; her raw scores reflected that she achieved 38 for the tonal sub-test and 37 for the rhythm sub-test. Ashleigh’s musical abilities therefore placed her within the 93rd (tonal) and 97th
(rhythm) percentiles, in which her ranking for both sub-tests post-intervention was now high.

Table 27
Ashleigh’s pre- and post-intervention PMMA scores

<table>
<thead>
<tr>
<th>Raw Scores</th>
<th>Percentile Scores</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ton Pre</td>
<td>Ton Post</td>
<td>Rhy Pre</td>
</tr>
<tr>
<td>26</td>
<td>38</td>
<td>26</td>
</tr>
</tbody>
</table>

Table 28 indicates the raw scores from pre- to post-intervention and confirm Ashleigh’s improvement of her tonal score by 12 points, and her rhythm score by 11 points. This highlighted the impact of the intervention on the development of Ashleigh’s tonal and rhythmic capabilities.

Table 28
Difference in Ashleigh’s pre- and post-intervention PMMA scores

<table>
<thead>
<tr>
<th>Participant</th>
<th>Tonal</th>
<th>Rhythm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashleigh</td>
<td>+12</td>
<td>+11</td>
</tr>
</tbody>
</table>

Table 29 indicates that after 10 weeks of the intervention being withdrawn, Ashleigh maintained a high ranking for both tonal and rhythm subtests. While her tonal raw score remained at 38 and in the 93rd percentile, her rhythm score decreased by 3 points to a 34 and fell to the 86th percentile. Despite this decrease in Ashleigh’s rhythm raw score, it was still 8 points higher than the score she achieved on her pre-test. While Ashleigh’s tonal raw score remained at a 38 from post-intervention to follow-up, it was still 12 points higher than her initial score of 26 that was achieved on the pre-intervention test. From this data, it indicated that not only did the intervention significantly improve Ashleigh’s musicality in both tone and rhythm, but that the effects
were maintained 10 weeks after the removal of the intervention, more so for her tonal ability than rhythm.

**Table 29**

*Ashleigh’s post-intervention and follow-up (FU) PMMA scores after 10 weeks of no intervention*

<table>
<thead>
<tr>
<th>Raw Scores</th>
<th>Percentile Scores</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ton Post</td>
<td>Ton FU</td>
<td>Rhy Post</td>
</tr>
<tr>
<td>38</td>
<td>38</td>
<td>37</td>
</tr>
</tbody>
</table>

From the structured interview with Ashleigh’s parents, it was disclosed that she did not engage in any form of formal musical activity or instruction outside of the general music classes provided at the case site. Furthermore, no members of her family sang or played any musical instruments at home. It can thus be suggested that the significant improvement to Ashleigh’s level of musicality was as a result of both her enjoyment of music and the eight-week intervention in which she engaged with and participated in.

**4.2.4 MARCUS**

Marcus was seven years and eleven months old and in Year 2 at Broadwater State School at the commencement of the intervention. Arabic, an atonal language, is Marcus’ native language. Marcus had only just arrived in Australia a few weeks prior, which is the shortest duration spent living in Australia out of all student participants in this research. Marcus did not have any form of private or formal music instruction other than the generalist music lessons offered at the case site for all students. None of his family members played a musical instrument; however, Marcus’ dad loved singing and would sing to his children before they went to sleep. Often they would join in.
Primary Measures of Music Audiation (PMMA)

Prior to and after his engagement with and participation in the intervention, Marcus completed the PMMA computer generated test. His individual pre- and post-test results are reflected in Table 30.

Table 30
Marcus’ pre- and post-intervention PMMA scores

<table>
<thead>
<tr>
<th>Raw Scores</th>
<th>Percentile Scores</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ton Pre</td>
<td>Ton Post</td>
<td>Rhy Pre</td>
</tr>
<tr>
<td>34</td>
<td>-</td>
<td>22</td>
</tr>
</tbody>
</table>

Prior to the intervention, Marcus received PMMA scores that evidenced his tonal ability as initially higher than his rhythmic ability. He received a raw score of 34 for his tonal sub-test, thus placing him in the 66th percentile and achieving a ranking of ‘average’. His rhythm sub-test raw score was a 22 that placed him in the 17th percentile and received a ‘low’ ranking. Marcus was unfortunately taken back to his home country one week before the completion of the intervention. Consequently, a post-intervention test using the PMMA was unable to be implemented to see the potential effects of his engagement with and participation in the eight-week intervention.

Marcus was absent for multiple days when the follow-up test was taken, as such, data could not be collected as a follow-up test in regards to the maintenance of his musicality as a result of his engagement with and participation in the eight-week intervention.
4.2.5 MEGAN

Megan was in Year 1 at Broadwater State School at the start of the intervention, and was aged six years and eleven months old. Her native language is Russian - an atonal language. Megan had been living in Australia for a total of eight months when she started participating in the intervention. Megan did partake in private guitar lessons outside of the generalist music classes offered to all students at the case site. When she first participated in the music intervention, she had been learning the guitar for approximately six months. Megan’s mother shared that she never practised her guitar at home. No one in Megan’s family played a musical instrument, and Megan was the only one who sang at home in both English and her native language of Russian.

**Primary Measures of Music Audiation (PMMA)**

Megan’s PMMA scores (Table 31) indicated that she was at an average level for both her tonal and rhythmic abilities. Her raw score for the tonal sub-test was a 27, and a 23 for the rhythm sub-test, placing her in the 37th and 32nd percentiles respectively. Post-intervention scores indicated significant improvement in Megan’s tonal and rhythmic abilities. She received raw scores of 35 (tonal) and 38 (rhythm), placing her in the 88th and 99th percentiles respectively in which she was now ranked as high in both sub-tests.

<table>
<thead>
<tr>
<th>Table 31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Megan’s pre- and post-intervention PMMA scores</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Raw Scores</th>
<th>Percentile Scores</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ton</strong></td>
<td><strong>Rhy</strong></td>
<td><strong>Ton</strong></td>
</tr>
<tr>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
</tr>
<tr>
<td>27</td>
<td>35</td>
<td>37</td>
</tr>
</tbody>
</table>

Table 32 outlines Megan’s improvement in both areas, particularly in her rhythmic abilities where her raw score increased by 15 points, and an 8-point increase.
in her tonal sub-test. Megan’s post-intervention scores suggested that the eight-week intervention assisted in the improvement in and development of her tonal and rhythmic abilities.

Table 32

<table>
<thead>
<tr>
<th>Participant</th>
<th>Tonal</th>
<th>Rhythm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Megan</td>
<td>+8</td>
<td>+15</td>
</tr>
</tbody>
</table>

Data in Table 33 outlines that Megan maintained her high level ranking for both the tonal and rhythmic sub-tests 10 weeks after the removal of the intervention. Megan maintained the same tonal raw score of 35 during the follow-up test. However, her rhythm score decreased by 5 points – from a raw score of 38 to 33. While she remained in the 88th percentile for her tonal sub-test, Megan moved from the 99th to 90th percentile for rhythm. In saying this, Megan did remain within the high ranking for both sub-tests, indicating that after the intervention was withdrawn, the effects of it were maintained, more profoundly in the tonal category as they remained the same as the post-test. Despite the decrease in score for her rhythm subtest, the intervention had a significant effect on Megan’s rhythmic ability even after 10 weeks of no intervention. Megan received a raw score of 23 for rhythm in her pre-intervention test, and her follow-up raw score for this sub-test was 10 points higher at a 33. Furthermore, while Megan’s tonal sub-test raw score was maintained from post-intervention test to follow-up, it had increased by 8 points when compared to the score of 27 she received for her tonal ability prior to the intervention. From this data, it can be suggested that the intervention not only developed and increased Megan’s musicality in both areas of
tone and rhythm, but that it was maintained, more prominently for tonal, 10 weeks after
the intervention was withdrawn.

Table 33

Megan’s post-intervention and follow-up (FU) PMMA scores after 10 weeks of no intervention

<table>
<thead>
<tr>
<th>Raw Scores</th>
<th>Percentile Scores</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ton Post</td>
<td>Ton FU</td>
<td>Rhy Post</td>
</tr>
<tr>
<td>35</td>
<td>35</td>
<td>38</td>
</tr>
</tbody>
</table>

It was revealed during the interview with Megan’s parents that she did partake
in individual private guitar lessons in addition to the generalist music classes provided
to all students at the case site. In saying this, Megan’s mother shared that despite
these lessons, she did minimal to no practise at home. Additionally, it was stated that
no one in Megan’s family played a musical instrument at home. It can therefore be
suggested that it was due to Megan’s private guitar instruction that resulted in average
rankings on her PMMA pre-intervention test as she was already more aware of and
attuned to recognising and identifying tonal and rhythmic differences. It can also be
suggested that prior music exposure and instruction enhanced her receptiveness of
tonal and rhythmic patterns being explicitly taught throughout the intervention, as she
was already aware of tone and rhythm and better able to apply and build on this
knowledge. It is suggested that the intervention did develop Megan’s musicality.
However, it is recognised that Megan’s prior musical experience possibly enabled her
to better understand, develop, and apply the tonal and rhythmic patterns being taught
throughout the intervention.

4.2.6 MICHAEL

Michael was in Year 1 at Broadwater State School and aged six years and six months
at the start of the intervention. Michael has a native language of Bengali, which is
considered to be a pitch-accented language whereby, the meaning of certain words in the spoken language change in accordance to the pitch or intonation in which they are uttered. When the intervention commenced, Michael had been living in Australia for eight months. Michael did not participate in any formal music lessons outside of those generalist lessons for all students provided at the case site, as his parents wanted his main focus to be on learning the English language and as such outside, co-curricular activities to a minimum. No one in Michael’s family played a musical instrument; however, his father enjoyed singing, and his mother, brother, and Michael liked listening. This singing was done in Bengali and Hindi as English songs were difficult due to their native language accent. Michael did enjoy singing occasionally, and would do so in English at random times.

**Primary Measures of Music Audiation (PMMA)**

The PMMA scores for Michael (Table 34) prior to the intervention indicated that he was quite musically inclined as he received a ranking of high for both his tonal and rhythm sub-tests. His raw scores pre-intervention were a 35 (tonal) and 31 (rhythm), and placed him in the 88th and 80th percentiles respectively. Post-intervention still evidenced an improvement in Michael’s raw scores (Table 34), with him achieving a 38 for his tonal sub-test, and a 36 for his rhythm.

<table>
<thead>
<tr>
<th>Raw Scores</th>
<th>Percentile Scores</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ton</strong></td>
<td><strong>Rhy</strong></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>Post</td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>Post</td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>Post</td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>Post</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>88</td>
<td>H</td>
</tr>
<tr>
<td>38</td>
<td>99</td>
<td>H</td>
</tr>
<tr>
<td>31</td>
<td>80</td>
<td>H</td>
</tr>
<tr>
<td>36</td>
<td>98</td>
<td>H</td>
</tr>
</tbody>
</table>

These scores in Table 35 still reflected his development as his raw scores increased by 3 points (tonal) and 5 points (rhythm), which still ranked him as a high in
both areas. It was possible that Michael’s initial high scores were a reflection of his enjoyment of singing in his native language in his home environment, thus having practised a variety of tonal and rhythmic changes as he sang. Furthermore, Michael’s native language (Bengali) was pitch-accented, whereby pitch and tonal variations are used to differentiate words. His need to be aware of subtle tonal variations in his native language may have translated to his musical ability and being more able to discriminate the differences within the tonal and rhythm sub-tests. Despite his initially high results, it could still be implied that the intervention further developed his tonal and rhythmic abilities as his PMMA scores did increase from pre- to post-intervention.

Table 35

<table>
<thead>
<tr>
<th>Participant</th>
<th>Tonal</th>
<th>Rhythm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michael</td>
<td>+3</td>
<td>+5</td>
</tr>
</tbody>
</table>

A follow-up PMMA test was conducted 10 weeks after the withdrawal of the intervention, in which Michael’s scores are presented in Table 36. The data indicates that Michael maintained his ranking of ‘high’ for both the tonal and rhythm sub-tests during the follow-up test. Michael’s raw score for rhythm remained at a 36 and thus in the 98th percentile. However, his tonal raw score decreased by two points from a 38 to a 36, and was then situated within the 92nd percentile. Although Michael’s tonal raw score decreased from post-intervention to follow-up, it remained one point above the score on his pre-test that was conducted prior to his engagement with and participation in the intervention. While Michael’s raw score was maintained for the follow-up rhythm sub-test, it was still five points above his pre-test score. The data from the PMMA tests indicated that the intervention not only improved Michael’s already high levels of
musicality, but that they were maintained 10 weeks after the removal of the intervention.

Table 36

Michael’s post-intervention and follow-up (FU) PMMA scores after 10 weeks of no intervention

<table>
<thead>
<tr>
<th>Raw Scores</th>
<th>Percentile Scores</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ton Post</td>
<td>Ton FU</td>
<td>Ton Post</td>
</tr>
<tr>
<td>38</td>
<td>36</td>
<td>99</td>
</tr>
<tr>
<td>Rhy Post</td>
<td>Rhy FU</td>
<td>Rhy Post</td>
</tr>
<tr>
<td>36</td>
<td>36</td>
<td>92</td>
</tr>
<tr>
<td>Ton Post</td>
<td>Ton FU</td>
<td>Ton Post</td>
</tr>
<tr>
<td>99</td>
<td>92</td>
<td>98</td>
</tr>
<tr>
<td>Rhy Post</td>
<td>Rhy FU</td>
<td>Rhy Post</td>
</tr>
<tr>
<td>98</td>
<td>98</td>
<td>H</td>
</tr>
</tbody>
</table>

From the interview conducted with Michael’s parents, it was reported that Michael did not engage in any formal music lessons outside of those generalist lessons provided by the case site for all students. Furthermore, it was stated that no one in Michael’s family played a musical instrument; however, his father did enjoy singing to his family. Although Michael did not actively sing with his father, the frequent singing could potentially have assisted the development of Michael’s listening skills resulting in his ability to discriminate between pitches and/or rhythms. However, Michael’s lack of formal music instruction and experience outside of the classroom did not account for his unexpectedly high results for both his tonal and rhythm subtests prior to his participation in the intervention. Whilst it is suggested that all humans, in particular children, are innately musical (Anderson & Lawrence, 2014; Campbell, 2008; Welch, 2010), one potential explanation could be related to his native language.

Michael’s native language is pitch accented (tonal), where variations in pitch when speaking can provide a different word meaning. It can be suggested that his need to be more aware of subtle pitch inflections in his native spoken language may have translated to his unexpected high results on his PMMA pre-test. Michael’s post-intervention test PMMA results indicated that improvements were made, suggesting that despite his already high level of musicality in both tone and rhythm, the
intervention still developed each area, but to a lesser degree than other student participants.

4.2.7 SUMMARY OF PMMA FINDINGS

Only five of the six student participants could be reported on for the PMMA as Marcus was out of the country when post-intervention and follow-up data was collected. After their participation in the eight-week music intervention, all five students demonstrated an increase, to varying levels, in their PMMA tonal and rhythmic scores. Whilst they all received a post-intervention ranking of high for both tonal and rhythm sub-tests, the extent of their improvement from pre-intervention levels revealed some students improved more than others.

Pre- to post-intervention

In the tonal test, Alex improved the most out of all participants as his score witnessed a 19 point increase, and Abraham was the second highest in this category demonstrating a 15 point increase in his tonal scores from pre- to post-intervention. The student who improved the least in the tonal test was Michael, only showing a 3 point increase in his score. Similar to the tonal sub-tests, all students demonstrated increased rhythmic ability, to various extents, after engaging in the eight-week music intervention based upon Gordon’s Music Learning Theory (2011). It was Megan who improved her ‘rhythm’ score the most out of any other student participants. However, Abraham and Alex were the two students whose improved scores placed them second, as they both witnessed an increase of 14 points after engaging and participating in the intervention, just one point behind Megan’s improved score. Although all students increased their score on the rhythm PMMA test, the student who improved the least was Michael who only reflected a 5 point increase.
It is noted that while Abraham and Alex were the two students who improved the most in their post-intervention tonal sub-test, they both scored the lowest two scores in this area on their PMMA pre-tests. Additionally, they both scored the lowest pre-test scores for ‘rhythm’. It is unknown why this occurred, as the information provided by Abraham’s and Alex’s parents about their musical experiences and engagement could not account for such improvements. This suggests that gains in musicality is easier for those who have not been exposed to significant amounts of musical experiences. Furthermore, it argues the appropriateness of this music approach to develop students’ tonal and rhythmic ability, as previous musical experience is not necessary to achieve improved results.

**Follow-up phase**

Follow-up scores for the tonal sub-test revealed that although some students maintained their post-intervention score or decreased it slightly, they all remained at a high ranking. This suggests carry-over effects exist after the completion of the intervention. The follow-up rhythm sub-test revealed that some students maintained or increased their scores and therefore remained at a high ranking. However, other students demonstrated a slight decrease in score and thus also maintained their high ranking. Abraham, however, was the only participant whose score decreased enough to move him from a high to average ranking during the follow-up PMMA rhythmic sub-test. These rhythm sub-test results suggest that there is the potential for the effects of the intervention to have a carry-over effect. However, it is not as significant as its effect on students’ tonal ability.

This PMMA data has highlighted the potential of this eight-week music intervention on the development and maintenance of students’ tonal and rhythmic
ability regardless of exposure to and engagement with music and musical activities. Even if a student has had prior musical experiences (Megan) and/or a native language that is pitch-accented (Michael), the data revealed that the intervention did improve their scores from pre- to post-intervention, and the maintenance of them when assessed 10 weeks later.

4.2.8 RESEARCHER OBSERVATIONS

As musical subject knowledge is required, the staff participant was not interviewed about students’ levels of musicality due to their lack of musical training. From reviewing and analysing anecdotal notes, observations, and audio visual footage of each intervention lesson, it was evident that all students demonstrated an increase in their levels of musicality as a result of the intervention in terms of pitch, rhythm, and audiation ability.

Discriminatory learning of pitch and rhythmic elements was present throughout each lesson of the music intervention, with three different songs taught each fortnight with elements of pitch as the focus in the first week, and rhythmic elements the focus of the song(s) in the following week. This discriminatory learning enabled the researcher to observe and note all students’ ability to construct specific tonal and rhythmic vocabulary identified by Gordon’s Music Learning Theory (MLT), and observed their implementation of it throughout the individual songs they were associated with.

Prior to the implementation of the music intervention, I observed that the majority of participants had limited tonal and rhythmic vocabularies. They exhibited behaviours that indicated that they may be shy and lacked confidence, which could be a result of not knowing the English language and/or their limited musical vocabulary.
Pitch and rhythmic patterns needed to be repeated for all students numerous times, and it was a challenge for me to get the majority of students to sing aloud in a dynamic so they could be heard, and thus their tonal and rhythmic vocabulary scaffolded by me. Ashleigh and Alex were both extremely shy, and would not attempt to sing/chant tonal and rhythmic patterns, even with my encouragement and their peer also within their pair. Abraham and Megan were shy too, but more willing to attempt singing/chanting tonal and rhythmic patterns. Although they attempted the patterns I provided them, they were just simply recalling. They did not recognise and reproduce the subtle changes in inflection and/or rhythm.

After the intervention, I observed that all the students were better at discriminating and singing pitches and chant rhythms, together with recognising the subtle changes within each. Additionally, they were able to learn these specific patterns (and the entire song) at a faster rate, as well as identify specific patterns within the song as a whole when sung by me. Although students demonstrated this ability at different stages throughout the intervention, by the conclusion, they were observed as making such improvements to their musicality by recognising and being able to reproduce, somewhat accurately, the subtle changes in pitch and rhythm, thus building their music vocabulary.

An increase in musicality was also observed in all students’ ability to recognise and sing different pitch patterns and melodies with increasing accuracy towards the second half of the intervention. Further, there was less reliance on me breaking the songs down into smaller, manageable segments, and repeating phrases to demonstrate and ensure pitch accuracy. Also, all students were not dependent on me singing with them, and were perceived to willingly sing in pairs and/or by themselves.
In addition to their exposure to and construction of a variety of melodic and rhythmic patterns, I observed students who were audiating – the primary goal and purpose of Music Learning Theory. Gordon (2010) defines audiation as the ability to hear sound when it may not be physically present; similar to our ability to ‘think’ in a language. All students demonstrated this ability by the second half of the intervention particularly within the lessons that focused on the rhythmic patterns within the selected song(s). Students were not only required to clap and chant ‘bah’ in a specific rhythmic pattern, but be able to continue doing so whilst maintaining the starting tempo. Within the first four weeks of the intervention, students were seen to struggle with: (a) clapping the correct rhythmic pattern(s); (b) chanting ‘bah’ in time with what they were clapping; and (c) maintaining the starting tempo with their clapping and ‘bah’ chanting.

Throughout the intervention, students were exposed to, explicitly taught (discriminatory learning), and engaged with a variety of rhythmic patterns due to the selection of a diverse range of songs outlined in the *Jump Right in Curriculum* (Taggart et al., 2010). Students’ frequent interaction with such rhythmic variety, and the explicit teaching and scaffolding of patterns enabled them to later discriminate between the patterns more efficiently. Additionally, chanting the ‘bah’ aloud whilst clapping along to each different rhythmic pattern provided students with the opportunity to hone their discriminatory skills further through such vocalisation and internalisation of the patterns. This vocalisation assisted in the audiation process, as by the conclusion of the intervention, students were observed maintaining the tempo without chanting ‘bah’ aloud because they were hearing it in their heads, having internalised the rhythm when chanting.

When taking the PMMA rhythmic and tonal tests prior to the implementation of the music intervention, all students were seen to find it challenging to identify whether
the two patterns presented each time were ‘similar’ or ‘different’. As students were to take these tests individually and without assistance from me or any other third party, they were observed exhibiting behaviours that confirmed their uncertainty of the answer. They would stare blankly at the screen for a period of time in silence, bite their lip, look around the room, and/or ask me if it could be played again, which it could not due to it measuring students’ ability to audiate.

However, when students took the same PMMA test post-intervention, they were seen to demonstrate behaviours that not only indicated increased confidence in their abilities, but their musical knowledge and understanding. Students did not ask for the tonal and/or rhythmic pattern to be repeated as frequently, answered the questions instantaneously (sometimes while the second pattern was still being played), and were also witnessed audiating. Students would not sing the tonal or rhythmic pattern aloud, but when unsure of the answer, would raise their eyes upward towards the ceiling, indicating that they were thinking, bob their heads in time to the rhythm that was heard and/or softly tap the two rhythms with their fingers on the table in front of them, and move their hands up or down to indicate pitch changes within the melodic pattern presented to them. These behaviours not only demonstrated the improvement in students’ ability to audiate, but the building up of their pitch and rhythmic vocabularies, which in turn assists with audiation as students have been exposed to, experienced, and engaged with a range of tonal and rhythmic patterns.

4.4 CHAPTER SUMMARY

The data presented in this chapter answered the first research question:

- What is the effect of this music intervention on musicality for students with English as an additional language or dialect?
The data collected to answer this question entailed the quantitative PMMA scores for pre-intervention, post intervention, and maintenance phases, as well as researcher observations pre- and post-intervention.

The Primary Measures of Music Audiation (PMMA) computer generated test provided quantitative data for each student participant that reflected the development of an increase in their tonal and rhythmic abilities after their engagement with and participation in the eight-week intervention, but to varying degrees. Analysis of the data suggested that prior musical experience could have assisted in the significant increase of some scores from pre- to post-test. Further, having a native accent that is pitch-accented could explain the high levels of musicality prior to one’s engagement with and participation in the eight-week intervention. Participants with a pitch accented language could be more aware of the subtle changes in pitch in order to make and express meaning in their native language. Despite these suppositions, it can be seen that students do not need to have any prior musical experience in order for the intervention to prove effective. With the exception of Marcus who was absent, all participants demonstrated significant increases in their scores despite their lack of formal music training, minimal engagement with music and singing outside of generalist lessons at school, and a native language being tonal (or pitch accented) or atonal.

When a follow-up test was completed 10 weeks after the withdrawal of the intervention, the effects of the intervention were maintained for all students for both tonal and rhythm subtests, except for Abraham whose rhythm test was slightly lowered. Although some student scores were seen to decrease slightly from post-test to follow-up, all raw scores remained higher than those from their pre-tests conducted prior to participation in the eight-week intervention.
My research observations supported the results from the PMMA tests in regards to the significance of student improvement throughout the course of the intervention. Minimal change occurred in the initial lessons of the intervention. However, after approximately four weeks, noticeable changes in students’ tonal and rhythmic ability began to surface. All students learned tonal and rhythmic sequences at faster rates as a result of the researcher scaffolding of students’ tonal and rhythmic vocabularies (discriminatory learning) throughout each song.

Further, all students were witnessed developing their ability to audiate throughout the lessons as they could hear tonal and/or rhythmic patterns in their head before producing them aloud. Students’ ability to audiate was demonstrated during the PMMA post-test and follow-up test, further suggesting that the intervention did develop, to some extent, students’ audiation. The post-test and follow-up test scores, and supporting observations by the researcher, indicate that the eight-week intervention developed the audiation ability of all students, and thus their musicality, regardless of their prior music experience.
EFFECTS OF A MUSIC INTERVENTION ON THE VERBAL FLUENCY, PROSODY, AND PRONUNCIATION IN STUDENTS WITH ENGLISH AS AN ADDITIONAL LANGUAGE OR DIALECT

5.1 INTRODUCTION

Chapter Five presents the data collected for each of the student participants in regards to the effects of the music intervention on their level of oracy, in particular their verbal fluency, prosody, and pronunciation. Consistent with a single-subject experimental design, each of these three elements is presented separately for each individual student. Pre- and post-intervention data was analysed to assist in answering the second research question:

- What is the effect of this music intervention on the oracy of students with English as an additional language or dialect?

To analyse the data, a combination of methods was used to investigate different elements of oracy:

- Verbal fluency: Student Oral Language Observation Matrix (SOLOM); teacher interviews; and mazing behaviour using SALT-NZAU (2016).
- Prosody: SOLOM, EAL/D Rating Scales, and teacher interviews.
- Pronunciation: SOLOM, EAL/D Rating Scales, and teacher interviews.
Whilst mazing behaviour is an indicator of students’ verbal fluency (Loban, 1976), the total number of utterances (verbal productivity) and mean length of utterances in words (sentence complexity) were also analysed given Crystal’s (1987) ‘bucket theory’, whereby improvements in one area, for example verbal productivity, could result in the decrease in another (verbal fluency). Crystal (1987) outlines that all areas (or levels) of language are interrelated, and that this ought to be considered if a specific part is under examination or investigation. Furthermore, particular levels of language can be classified as higher-order (semantics and syntax) or lower-order (phonetics and phonology), in which it is possible for lower-order levels to be influenced or constrained by those considered higher-order, and vice versa (Crystal, 1987). It was therefore recognised that the intended development of the specific skill of verbal fluency for this research may be hindered by other skill areas (verbal productivity and/or sentence complexity), and thus students’ total number of utterances and mean length of utterances (MLU) in words were examined in addition to mazing behaviour.

All student speech samples were transcribed verbatim and analysed using SALT-NZAU16 (Miller et al., 2016). SALTNZAU16 automatically calculates percentage of maze words, mean length of utterances (MLU), and the total number of utterances. Students’ mean performance (with standard deviations), prior to, during and following the intervention is reported below. Percentage of non-overlapping data (%NOD) was used to determine if the intervention resulted in a significant change in performance following the intervention.

Additionally, students’ ratings according to Education Queensland’s (2017) Bandscales State Schools (Queensland) for EAL/D learners are included as it is the assessment tool teachers in the state of Queensland used to identify and map the
progression of students with EAL/D. It demonstrates the effects of the music intervention on their speaking and listening skills according to this document.

5.2 ABRAHAM

Abraham’s parents shared that they speak minimal English as their native language (Arabic) is primarily spoken and reinforced at home. Abraham’s parents reported no difficulties with his speech or language development; however, they noted his tendency to rush when he is talking in Arabic.

5.2.1 VERBAL FLUENCY

5.2.1.1 Student Oral Language Observation Matrix

The average SOLOM scores calculated from the blind ratings by the three SLPs and three QRTs indicate that prior to the music intervention, Abraham’s verbal fluency was rated as a 3.17. At a level three rating, the fluency demonstrated by the student is defined as “speech in everyday conversation and classroom discussion [is] frequently disrupted by the student’s search for the correct manner of expression.” Post-intervention, Abraham was rated as a 3.33 for his verbal fluency; remaining within the same descriptor. This suggests that there was no significant change.

5.2.1.2 Teacher Interview

Statements from Mrs X revealed that Abraham exhibited somewhat fluent English-speaking behaviours prior to his participation in the intervention. Post-intervention, however, she commented that wait/process time was still required, and he still paused while speaking. Although it was noted that Abraham was “quite fluent,” Mrs X expressed that the “intervention has just strengthened that [his fluency] and made it stronger; allowed him to flourish even more.” Mrs X stated that while Abraham demonstrated some level of competency with his verbal fluency, further development
was still needed. However, the intervention had assisted in the maintenance of his current skill level.

5.2.1.3 Systematic Analysis of Language Transcripts (SALT)

Abraham’s speech samples were analysed for mazing behaviours that affect verbal fluency using SALT-NZAU (2016). Figure 4 provides the total number of utterances, the mean length of utterances (MLU) in words, and the number of mazes as a percentage of the total words within each of Abraham’s speech samples from pre-intervention, during the intervention, as well as the follow up post-intervention 10 weeks later.

![Figure 4. Measures of oracy: Abraham – total utterances, mean length of utterances (MLU) in words, and mazes as a percentage of the total words uttered (% maze words).](image)

Note: BD = baseline; W = intervention week; FU = follow-up.
Note: BD4 not available.

**Baseline (A)**

Figure 4 shows how prior to Abraham’s participation in the intervention, there was variability in mazing behaviour and total utterances. His average for MLU in words was
5.4 with a standard deviation of 0.9, this reflecting relatively consistent scores. Abraham was absent from school when the fourth baseline data point was collected so it was left blank Figure 4.

**Intervention (B)**

It can be seen that Abraham’s percentage of maze words and total utterances continued to vary each week throughout the intervention. In contrast, his sentence complexity as measured by MLU in words remained fairly constant from baseline data and throughout the intervention. While mean increased from a 5.4 to 5.6, standard deviation decreased to a 0.6, indicating Abraham’s scores became more consistent over this period.

**Follow-up (A)**

Post-intervention results revealed similar trends and lack of noticeable pattern in the data, as his total number of utterances were inconsistent, as well as variability in his mazing behaviour. Abraham’s MLU in words remained at a fairly stable level with minimal fluctuation between each data point.

**Calculations from SALT-NZAU data**

Table 37 indicates no significant change in Abraham’s verbal fluency from baseline until the final week of the intervention. Although the intervention proved ineffective in developing his verbal fluency during the eight-week intervention period (%NOD), calculations indicate minor improvements (i.e. reduction) in his mazing behaviour during the follow-up 10 weeks later.
Table 37

Abraham mean performance (SD), before, during and after the intervention – percent maze words

<table>
<thead>
<tr>
<th>Percent Maze Words</th>
<th>%NOD</th>
<th>Percent Maze Words</th>
<th>%NOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Intervention</td>
<td>Follow-up</td>
</tr>
<tr>
<td>Abraham</td>
<td>12.4 (5.8)</td>
<td>11.2 (6.2)</td>
<td>6.6 (1.6)</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

Calculations presented in Table 38 details Abraham’s verbal productivity. Calculations reveal the increase in his total number of utterances from baseline, end of the intervention, and during the follow-up phase. The percentage of non-overlapping data indicates the intervention was not effective during that period. However, questionable in its effects during the follow-up phase, indicating potential carry-over effects from the intervention. Lack of development could be due to how students learn and the need for more time to consolidate these skills before noticeable or significant improvements manifest.

Table 38

Abraham mean performance (SD), before, during and after the intervention – total number of utterances

<table>
<thead>
<tr>
<th>Total number of utterances</th>
<th>%NOD</th>
<th>Total number of utterances</th>
<th>%NOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Intervention</td>
<td>Follow-up</td>
</tr>
<tr>
<td>Abraham</td>
<td>43.3 (23.2)</td>
<td>51.4 (19.4)</td>
<td>88.0 (9.3)</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

The calculations presented in Table 39 support the previous descriptions of Abraham’s sentence complexity. Across baseline, intervention and follow-up phases, minimal change is recorded in which the percentage of non-overlapping data indicates ineffectiveness of the eight-week intervention on Abraham’s sentence complexity. It is note through the standard deviation calculations that Abraham’s MLU in words became more consistent from baseline to follow-up. Scores moved from a 0.9, to a
0.6, and then to 0.2. Although his sentence complexity did not increase, his consistency did.

Table 39

Abraham mean performance (SD), before, during and after the intervention – MLU in words

<table>
<thead>
<tr>
<th></th>
<th>MLU in words</th>
<th>%NOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Intervention</td>
</tr>
<tr>
<td>Abraham</td>
<td>5.4 (0.9)</td>
<td>5.6 (0.6)</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

5.2.1.4 Deductions for Abraham’s Verbal Fluency Development

Triangulation of the three data sets (SOLOM, teacher interview statements, and SALT-NZAU) all support that Abraham’s participation in the music intervention yielded no significant result in the development of his verbal fluency (mazing behaviour). In contrast, there was an improvement in the number of verbal utterances when communicating.

Supporting these findings are the statements provided by Mrs X in the semi-structured interview. She indicated that although still requiring development, Abraham was quite fluent compared to his peers of a similar age with EAL/D prior to the intervention. Post-intervention, however, Mrs X claimed the intervention assisted in strengthening and maintaining Abraham’s verbal fluency, which may have referred to Abraham’s improvement in verbal productivity, that being his total number of utterances.

Abraham might have developed to a level of verbal fluency that indicated some level of competence when communicating, but would require further development over a period longer than eight weeks to demonstrate significant improvement to progress him to the next level of proficiency. It should also be noted that his level of verbal
fluency following intervention is similar to monolingual English speaking Australian children his age (Westerveld & Vidler, 2016), which implies there is not much room for improvement, particularly if he continues to speak in relatively short sentences as shown by his MLU.

5.2.2 PROSODY

5.2.2.1 EAL/D Rating Scales

The average of the scores from the EAL/D Rating Scales was calculated from the blind ratings by the three SLPs and three QRTs. These indicate that prior to the music intervention, Abraham’s level of prosody was rated as a 2.82. This places him at beginning to demonstrate English language intonation patterns when speaking in English. Post-intervention, Abraham was rated as a 3.17, thus moving to a level three rating on the EAL/D Rating Scales. This increase now witnessed in the intonation patterns in Abraham’s spoken English somewhat resembling English prosody.

5.2.2.2 Teacher Interview

Statements by his teacher, Mrs X, prior to the intervention support these improvements to Abraham’s prosody when speaking English. She had observed that Abraham knew that a question has a raised inflection (melodic contour), as well as the placing of emphasis on certain words to assist in meaning making. She stated that “[he is] exuberant in the way he speaks most of the time. Has a lovely range and uses them [prosodic characteristics] appropriately.” Whilst Abraham did exhibit some knowledge of English prosody prior to his participation in the intervention, Mrs X reported that his levels of prosody did increase post-intervention, thus aligning with the increased scores on the EAL/D Rating Scales. Mrs X stated that his expression in spoken English had “been enhanced after this intervention, [it is] more refined.”
5.2.2.3 Deductions for Abraham’s Prosody Development

Data from the blind analysis using the EAL/D Rating Scales and statements from semi-structured interviews with Mrs X support the development of Abraham’s level of prosody after his participation in the eight-week music intervention. The EAL/D Rating Scales indicated that Abraham moved from a level 2 pre-intervention to a level 3 post-intervention. This is supported in Mrs X’s statements that indicated that whilst Abraham demonstrated some prosodic characteristics, he developed a range of them and was able to use them appropriately to communicate and enhance the meaning of his speech. It can be suggested that the explicit focus on specific tonal and rhythmic patterns throughout the music intervention and using them when singing English songs assisted in the development of his tonal and rhythmic vocabulary. This has positively transferred to his speech in the English language. Abraham does not partake in any musical activities or classes outside of those general classes offered at the case site, therefore, this further suggests that the intervention assisted in the development of his prosody when speaking English.

5.2.3 PRONUNCIATION

5.2.3.1 Student Oral Language Observation Matrix

The average SOLOM score for pronunciation calculated from the individual ratings scored by the six blind raters (SLPs and QRTs) indicate that prior to Abraham’s participation in the music intervention, his level of pronunciation was rated as 2.66. At a level two rating, Abraham’s pronunciation is described by SOLOM as “very hard to understand” where he “must frequently repeat in order to make him/herself understood.” Post-intervention, the average score for his pronunciation increased to a 3.16. This score whilst indicating his pronunciation required further work, it was more understandable to the listener. However, concentration on behalf of the listener was
necessary as some pronunciation problems can occasionally lead to misunderstanding.

5.2.3.2 EAL/D Rating Scales

Using the EAL/D Rating Scales, the average score calculated by the six independent raters placed Abraham at a 2.0 for his pronunciation prior to his participation in the intervention. At this level, it is indicated that he still speaks with his native language accent. However, he was beginning to speak English and pronounce words with less of that accent. Post-intervention, Abraham’s average score was calculated at a 3.0, indicating an improvement in his pronunciation where he spoke English with a moderate native language accent.

5.2.3.3 Teacher Interview

Statements from interviews with Mrs X support the ratings provided by SOLOM and the EAL/D Rating Scales in regards to the Abraham’s levels of pronunciation. Pre-intervention, Mrs X described the pronunciation of Abraham’s spoken English at pre-intervention as “rushed and blurred.” Further, his “articulation is [was] not that good because he’s so excited to get his message across.” These statements support Abraham’s pre-intervention numerical ratings, as they highlighted his speech is very difficult to understand and that his native language accent (Arabic) still influences his pronunciation a great deal. After Abraham’s participation in the intervention, Mrs X agreed that his pronunciation had improved; however, “for his pronunciation, there is still a long way to go [but] you can still make sense of it (his speech).” The scores provided for Abraham post-intervention as they both show improvement support this; however, attention to detail is needed by the listener to ensure no misunderstandings occur.
5.2.3.4  Deductions for Abraham’s Pronunciation

Triangulation of data from the SOLOM, EAL/D Rating Scales, and teacher interviews support the development of Abraham’s pronunciation post-intervention. The average scores calculated from blind analysis conducted using the SOLOM and EAL/D Rating Scales both support the development of Abraham’s pronunciation when speaking English. Both SOLOM and EAL/D Rating Scales demonstrate an increase from a level 2 to level 3, indicating that his native language accent (Arabic) is still somewhat evident when he speaks English. However, his speech is more understandable for the listener post-intervention (though they need to concentrate so as to not misunderstand). Mrs X’s statements supported Abraham’s pronunciation development, but cautioned that there was considerable development needed before his speech would sound similar to that of a native English speaker. This is typical of level 3 of the SOLOM scale where Abraham was rated post-intervention, as it highlights that work is still required and concentration from the listener is necessary to minimise misunderstandings due to his developing pronunciation skills when speaking English. It is deduced from these data sets that Abraham’s engagement with and participation in the music intervention assisted in the development of his pronunciation skills when speaking English.

5.2.4  ABRAHAM SUMMARY

Results from the triangulated data indicate Abraham did not demonstrate any improvement in his verbal fluency when speaking English post-intervention. Improvements in prosody and pronunciation following the intervention were reported; however, not to the level of a native English speaker.
5.3 **ALEX**

Alex lived in Australia with his mother and brother who both only speak basic English which allows them to communicate their essential and immediate needs. His native language of Arabic was primarily spoken at home. Alex’s mother indicated there were no speech difficulties in Arabic.

5.3.1 **VERBAL FLUENCY**

5.3.1.1 **Student Oral Language Observation Matrix**

Alex’s average SOLOM scores calculated by the six independent raters prior to his engagement in the intervention demonstrate that his verbal fluency was a score of 1.83. At this level, his speech was rather fragmented and that conversation was deemed near impossible. Post-intervention, it was calculated that Alex’s average score remained at the score of 1.83.

5.3.1.2 **Teacher Interview**

Prior to the intervention, Mrs X stated that she could not rate Alex’s verbal fluency as “he was either very, very quiet, or would only initiate single words, so there was no fluency at all.” He was fluent in his mother tongue of Arabic, but in English his utterances were largely single words and relied heavily on non-verbal communicative techniques such as gesture. Mrs X revealed that Alex did make improvements to his verbal fluency after his participation in the eight-week music intervention. Post-intervention, Mrs X referenced that Alex’s verbal fluency as “so much more improved.” She also noted that there were “fewer pauses than before” in his spoken English, and that he is now “uttering two or three sentences” at a time, unlike before.
5.3.1.3 Systematic Analysis of Language Transcripts (SALT)

Data regarding Alex’s verbal fluency, verbal productivity, and sentence length complexity pre-, mid- and post-intervention is presented in Figure 5, highlighting: (a) the total number of utterances; (b) mean length of utterances (MLU) in words; and (c) the number of maze words as a percentage of the total number of words uttered.

![Figure 5. Measures of oracy: Alex – total utterances, mean length of utterances (MLU) in words, and mazes as a percentage of the total words uttered (% maze words).](image)

Note: BD = baseline; W = intervention week; FU = follow-up.
Note: BD2 not available.

**Baseline (A)**

Figure 5 illustrates that prior to Alex’s participation in the eight-week music intervention, there was some consistency in verbal productivity (the total number of
utterances) with two scores being the same (22). Alex’s verbal productivity was an average of 17.0 words with no score consistency. Although his sentence complexity (MLU in words) was low at an average of 1.2, standard deviation calculations indicate that it was consistent throughout this phase. While Alex’s MLU was low, his mazing behaviour indicated good verbal fluency. It can be concluded that Alex demonstrated good verbal fluency as a result of his low MLU as he was only speaking in short single word phrases. No data is present for baseline data two (BD2) as Alex was absent from school that day due to illness. Tables 40-42 provide the data for these three areas and highlight the variability in verbal fluency and verbal productivity, and consistency in Alex’s sentence complexity.

**Intervention (B)**

Throughout the intervention, Alex’s verbal fluency showed variability which is reflected in the standard deviation score of 5.8. His mazing behaviour revealed inconsistent results at the start of the intervention where there was no discernible pattern. However, the final four weeks reflect a steady decrease in mazing behaviour occurred. Alex’s verbal productivity (number of utterances) fluctuated throughout without any pattern emerging, reflected in his standard deviation score of 14.2. Despite the fluctuation in Alex’s total number of utterances, the final four weeks of the intervention revealed some of his highest verbal outputs. Alex’s MLU in words indicates no significant change occurred in the complexity of his sentences. His mean score for MLU increased slightly to 1.8 with a standard deviation calculation of 0.4. This indicates that Alex was beginning to use more complex sentences consistently throughout this phase.
Follow-up and maintenance

Post-intervention results revealed that Alex’s verbal productivity remained inconsistent. Post-intervention, Alex produced fewer utterances than prior to or during the intervention. In contrast, there was an improvement in Alex’s MLU in words during the follow-up phase, indicating the gradual development of sentence complexity. Alex’s verbal fluency improved during this phase. His mean score for mazing behaviour decreased to a 4.5, with a standard deviation of 1.9. This indicates improvements to and more consistency in his verbal fluency when speaking English. The effects of the intervention on Alex’s verbal fluency and sentence complexity were, therefore, maintained after the intervention.

Calculations from SALT-NZAU data

Table 40 presents the variability described in Alex’s verbal fluency throughout the intervention. Although the mean increased, his scores were inconsistent. Consequently, the %NOD suggests that the intervention was ineffective in improving Alex’s verbal fluency. The follow-up calculations indicate potential carry-over effects of the intervention due to decreased maze words and more consistency with scores.

Table 40

<table>
<thead>
<tr>
<th>Percent Maze Words</th>
<th>%NOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
</tr>
<tr>
<td>Alex</td>
<td>8.7 (5.6)</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

Calculations imply that the intervention potentially assisted in the development of Alex’s verbal productivity (Table 41). Although there were inconsistencies in verbal output indicated by the standard deviation, the mean score increased during the
intervention indicated more verbal utterances. The decrease in the follow-up
calculations suggest no carry-over effects occurred for Alex upon completion of the
eight-week intervention.

Table 41

*Alex mean performance (SD), before, during and after the intervention – total number of utterances*

<table>
<thead>
<tr>
<th>Total number of utterances</th>
<th>%NOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
</tr>
<tr>
<td>Alex</td>
<td>17.0 (8.7)</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

Table 42 captures the effectiveness of the intervention in developing his sentence complexity (MLU in words). Alex’s MLU seemed to increase during the intervention. At the follow-up phase, Alex’s MLU in words had improved significantly as shown in the high percentage of non-overlapping data (%NOD).

Table 42

*Alex mean performance (SD), before, during and after the intervention – MLU in words*

<table>
<thead>
<tr>
<th>MLU in words</th>
<th>%NOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
</tr>
<tr>
<td>Alex</td>
<td>1.6 (0.2)</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective

5.3.1.4 Deductions for Alex’s Verbal Fluency Development

Triangulating the three data sets (SOLOM, teacher interviews, and SALT-NZAU) revealed mixed results of improvements in Alex’s verbal fluency after his participation in the eight-week music intervention. Alex’s verbal fluency showed variability; however, improvements were evident in the final four weeks and during the follow-up phase with decreased and more consistent mazing behaviour. Although there was fluctuation and no evident trend throughout the intervention, Alex’s verbal productivity (total number of utterances) increased. However, this was not maintained after the
cessation of the intervention. While Alex’s sentence complexity remained at a stable level throughout the intervention phase with slight increases in the final few weeks, the follow-up phase revealed the maintenance effects of the intervention on his sentence complexity through increased MLU scores. It can be implied that Alex’s decreased mazing behaviour and increased sentence complexity immediately after the conclusion of the intervention indicates improvements to his verbal fluency when communicating in English.

While statements from Mrs X support Alex’s improvements in his verbal fluency after his participation in the eight-week music intervention, the SOLOM results did not change. The lack of improvement recorded on the SOLOM is interpreted as the independent raters only scoring his verbal fluency off one post-intervention language sample in which he may not have been as willing to talk on that day. Additionally, the perceived lack of improvement could be due to the process of averaging scores. It was possible for individual scores from the raters to be contradictory whereby a relatively high score indicating improvement could be counteracted by a low score. This supports the SALT-NZAU data and teacher statements implying he did show some improvement to his verbal fluency post-intervention.

5.3.2 PROSODY

5.3.2.1 EAL/D Rating Scales

Prior to his engagement with and participation in the music intervention, the six independent raters scored Alex with an average score of 2.5 for his level of prosody when speaking English. This level indicates that he is beginning to develop and use the intonation patterns that are expected within spoken English. The average score calculated for Alex’s level of prosody post-intervention was seen to decrease from a 2.5 to 2.33. Although remaining within level two on the EAL/D Rating Scales, it is
proposed that this small decrease in Alex’s level of prosody was due to the independent raters only being provided with one post-intervention speech sample. This may have reflected the level of prosody only for that particular day in which Alex may not have been willing to talk much. Further, as average scores were calculated from the six independent rater scores, it is suggested that the decrease from pre- to post-intervention was as a result of one rater scoring Alex at the same level or higher, and another scoring him significantly lower, thus affecting the improvement perceived by individual raters.

5.3.2.2 Teacher Interviews

Semi-structured interviews with Mrs X revealed that prior to Alex’s engagement with and participation in the music intervention, he demonstrated minimal prosody when speaking English. Mrs X described his expression as “very monotonous.” Alex did not verbally communicate extensively in English. His verbal behaviours lacked pitch inflections and the stresses expected in spoken English. At post-intervention, Mrs X noticed that Alex’s level of prosody when speaking English had improved. He had not only learned to appropriately imitate everyday expressions, but he was “aware of using his voice to carry meaning.” Examples included understanding that “his voice will go high when asking a question… he’ll sigh or groan or put emphasis on word when he wants to communicate that.” After the intervention, Mrs X indicated that Alex’s speech was no longer monotone and he spoke with feeling and expression.

5.3.2.3 Deductions for Alex’s prosody

It can be inferred that as a result of his engagement with and participation in the music intervention, Alex’s level of prosody did increase despite one data source remaining at the same level from pre- to post-intervention. The spontaneous speech samples analysed by the independent raters using the SOLOM outline that Alex remained
within level two for his prosody development both pre- and post-intervention. It must be noted that Alex’s development was only analysed based upon one speech sample for both pre- and post-intervention, therefore, reflecting his speech on that particular day and potentially reflecting a day where he was not as talkative and lacked evidence of particular prosodic characteristics. Although SOLOM did not evidence an increase in level for Alex’s prosody and was based on a single speech sample for pre- and post-intervention, the semi-structured interviews with Mrs X revealed that Alex made significant developments in his level of prosody when speaking in English when compared to pre-intervention. Statements from Mrs X included descriptions of specific prosodic characteristics he is using when speaking in English, including emphasis (stress) and intonations (pitch). This evidence from Mrs X refuted what the SOLOM scores presented and is to be considered more reliable data as it provided stronger evidence based upon Alex’s prosody development as Mrs X teaches and interacts with Alex on a daily basis, in which observations of his level of prosody when speaking English is not based on a single speech sample. This SOLOM test can be considered a snapshot in time. Consequently, a variety of tests and/or observations are required when assessing any element of oracy within the classroom context to provide reliable evidence. It can be reasoned that Alex’s prosody when speaking English did improve after his engagement with and participation in the music intervention; however, development is still required in order for it to reach native-like proficiency.

5.3.3 PRONUNCIATION

5.3.3.1 Student Oral Language Observation Matrix

Prior to his participation in the intervention, the six independent raters gave Alex a score of 3.08 for his pronunciation when speaking English. At this level, he has difficulty with pronunciation and the listener needs to listen carefully so as to avoid any
misunderstandings arising from his pronunciation. Alex’s post-intervention average score revealed a decrease in his pronunciation skills, receiving a 2.66. Moving to a level two indicates that Alex’s spoken English is very hard to understand as a result of pronunciation difficulties, where he frequently repeated himself, with the listener unable to understand what he is attempting to communicate. It is unknown why this decrease occurred. However, the raters were only given one post-intervention speech sample, which could have been a day Alex was not particularly talkative to best represent his pronunciation skills, or even excited about something and consequently rushed or blurred his speech. Similarly to Alex’s level of prosody, select individual raters may have perceived his speech as the same or improved. However, Alex’s average score did not reflect this potential due to it being counteracted by a significantly lower score provided by another rater.

5.3.3.2 EAL/D Rating Scales

Prior to his participation in the intervention, the independent raters provided Alex with an average score of 2.5 for his pronunciation skills when speaking English. At this level, Alex is beginning to pronounce English words somewhat accurately; however, is still strongly influenced by his native language accent (Arabic). Alex’s post-intervention average score for his pronunciation skills was evidenced as decreasing to a 2.0. Although decreasing, his pronunciation skills remained within level two post-intervention, highlighting that his native accent is still a strong influence on his pronunciation of English words. Similarly, to the SOLOM scores, it is suggested that this decrease was as a result of raters being provided with one post-intervention speech sample, and the averaging of their scores in which another who believes differently could counteract perceptions of improvement by one rater.
Teacher Interviews

The semi-structured interviews conducted with Mrs X reveal that despite the decrease in Alex’s pronunciation skill outlined by the SOLOM and EAL/D Rating Scale average scores, he showed improvements in his pronunciation skills when communicating in English verbally. Prior to his engagement with and participation in the music intervention, Alex’s pronunciation was difficult to determine as Mrs X stated he was very shy and would not speak often enough. However, when he did speak, it was “very quietly and almost a mumble.” It was only because she (Mrs X) had been trained as an EAL/D teacher that she could ‘read between the lines’ and approximate what he was trying to communicate. However, “for [his] mainstream teacher who didn’t know where he was coming from, they would not always know what he was trying to say.” Post-intervention, Mrs X had observed Alex having “absolutely improved” his pronunciation skills when verbally communicating in English. As Alex is speaking more frequently, Mrs X has noticed that he does have quite a distinct Arabic accent when speaking in English. Additionally, Mrs X highlighted that Alex does have a slight lisp when talking. However, she states “it’s not impeding on anything.” These statements from Mrs X reveal that she has noticed an improvement in Alex’s pronunciation skills when speaking in English. However, her statements also support the presence of Alex’s native language that is quite thick and may occasionally affect his pronunciation for native English speakers who are not trained in EAL/D.

Deductions for Alex’s pronunciation

Data collected in regards to Alex’s pronunciation reveals differences in regards to his pronunciation development. Both SOLOM and EAL/D Rating Scales used by the independent raters to analyse the pre- and post-intervention spontaneous speech samples reveal that Alex remained within the same level before and after his
engagement and participation in the music intervention. Similar to his level of prosody, this data was only based on one speech sample, in which he may not have been particularly talkative on that day, thus not demonstrating increased levels of pronunciation when speaking in English. The semi-structured interviews with Mrs X provided data that refute the SOLOM and EAL/D Rating Scales, and suggest that in her opinion, Alex’s pronunciation when speaking English improved greatly after his engagement with and participation in the music intervention. Mrs X is a specially trained EAL/D teacher and interacts with Alex on a daily basis both in and outside of the classroom at school whereby having multiple opportunities to observe his pronunciation in a variety of contexts, consequently, the statements provided in regards to Alex’s pronunciation can be considered more reliable. Not disregarding what the results from SOLOM and the EAL/D Rating Scales provided, it can be understood from all the data that Alex did improve his pronunciation after his participation in the intervention. However, there is still significant development necessary in the area of pronunciation in order for him to achieve native-like proficiency.

5.3.4 ALEX SUMMARY

Alex’s engagement in the eight-week music intervention produced mixed results. Triangulation of data revealed Alex’s verbal fluency and verbal production had increased by the conclusion of the intervention, yet decreased when follow-up maintenance data was collected 10 weeks later. Developments in prosody and pronunciation were mixed as the independent raters did not perceive any difference in these two areas. However, Mrs X believed he had improved. The contradiction in these results outline the need for further research in this area.
5.4 ASHLEIGH

Ashleigh’s parents do not speak English, only her older brother does, and Tigrinya is the language spoken in her home environment. No difficulties or challenges were highlighted as being evident when Ashleigh was learning her native language.

5.4.1 VERBAL FLUENCY

5.4.1.1 Student Oral Language Observation Matrix

The average SOLOM scores calculated from the ratings by the three SLPs and three QRTs indicate that prior to the music intervention, Ashleigh’s verbal fluency was rated as a 1.23. At a rating of level one, the definition of verbal fluency demonstrated by the student is that their “speech is so halting and fragmentary as to make conversation virtually impossible.” Post-intervention, Ashleigh was rated as a 1.83 for her verbal fluency.

5.4.1.2 Teacher Interview

Ashleigh’s pre- and post-intervention verbal fluency scores provided by SOLOM are supported by statements from Mrs X. Prior to the intervention, Mrs X stated “there wasn’t any fluency” to Ashleigh’s speech; just survival English of what she needed the most. She was observed using words “only if she had to” in which all other communication was via non-verbal communication techniques; she would “mak[e] it clear through actions what she may want.” Although the average scores of the six independent raters indicated slight improvements to Ashleigh’s verbal fluency post-intervention, Mrs X indicated that this improvement is significant for her. Although she was not producing extended thought, Ashleigh “[had] absolutely improved” her levels of verbal fluency post-intervention, and is now uttering phrases that contain more words, approximately four or five, which “is amazing by comparison.”
5.4.1.3 Systematic Analysis of Language Transcripts (SALT)

Ashleigh’s verbal fluency is presented in Figure 6, whereby the total number of utterances, MLU in words, and percentage of maze words are outlined pre-intervention, throughout the eight-week intervention, and post-intervention.

![Figure 6. Measures of oracy: Ashleigh](image)

*Figure 6. Measures of oracy: Ashleigh – total utterances, mean length of utterances (MLU) in words, and mazes as a percentage of the total words uttered (% maze words).*

*Note: BD = baseline; W = intervention week; FU = follow-up.*

**Baseline (A)**

Figure 6 reveals Ashleigh’s verbal fluency during this phase was inconsistent. There was much variability in the scores for her mazing behaviour, which is reflected in her standard deviation score of 10.1. There was no discernible pattern with Ashleigh’s verbal productivity as the total number of utterances was also unstable and seen to vary throughout this phase. Although at a low level, Ashleigh’s sentence complexity (MLU in words) throughout this baseline phase remained relatively stable and consistent, evident through her standard deviation score of zero. Tables 43-45 outline...
the inconsistency with Ashleigh’s verbal fluency and verbal productivity, but a relatively stable baseline for her sentence complexity (MLU in words).

**Intervention (B)**

Throughout the intervention, Figure 6 illustrates how Ashleigh’s verbal fluency remained inconsistent as there was variability in her mazing behaviour with no discernible pattern (standard deviation of 9.2). Ashleigh’s verbal productivity (total number of utterances) was also seen to vary and fluctuate throughout the intervention phase without any pattern evident. It is noted that despite the lack of pattern identification, her total number of utterances had increased when compared to the baseline phase, thus being from a mean score of 8.0 to 14.0 throughout this phase. The complexity of Ashleigh’s sentences (MLU in words) was seen to remain at a consistent level throughout this phase (standard deviation of 0.6), with slight increases toward the final weeks of the intervention. Tables 43-45 demonstrate the lack of trend in the development of Ashleigh’s verbal fluency and productivity throughout this phase, yet the somewhat consistency with her sentence complexity. It also presents the (in) effectiveness of the intervention for each of these three areas.

**Follow-up and maintenance**

Figure 6 illustrates Ashleigh’s verbal fluency did not make improvements, largely due to the number of mazes still within her speech. Despite this, it was noticed that her mazing behaviour was not as inconsistent during this phase, as the standard deviation score was calculated at 2.5 compared to 10.1 (baseline) and 9.2 (intervention). Ashleigh’s verbal productivity also demonstrated continual fluctuation throughout this phase as there is no consistency or pattern evident despite two of the three scores being some of the highest recorded throughout the entire data collection period.
Ashleigh’s sentence complexity was seen to increase post-intervention whereby all three scores were substantially higher than all other scores recorded throughout the data collection period, and two of these three follow-up scores were at a similar level. This is reflected in Table 45 where her mean MLU score was calculated as 4.6 with a standard deviation of 1.8, reflecting some level of consistency with her MLU scores.

**Calculations from SALT-NZAU data**

Table 43 supports the lack of verbal fluency (mean score) and further demonstrates Ashleigh’s inconsistency when speaking English (standard deviation) prior to her participation in the eight-week intervention.

Table 43

| Ashleigh mean performance (SD), before, during and after the intervention – percent maze words |
|------------------------------------------|-----------|-----------|-----------|-----------|-----------|
|                                        | Percent Maze Words | %NOD      |            |            |            |
|                                        | Baseline | Intervention | Follow-up | Intervention | Follow-up |
| Ashleigh                               | 17.2 (10.1) | 13.8 (9.2) | 11.0 (2.5) | 25%        | 0%        |

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

Slight improvement is observed due to the decreased mean. A significant number of mazes remain present within Ashleigh speech during the follow-up phase; however, there was more consistency with her speech. Consequently, the intervention could be considered ineffective in developing Ashleigh’s verbal fluency.

Calculations presented in Table 44 indicates Ashleigh’s verbal productivity increased over the intervention period, however, with increased variability. Although this fluctuation continued during the follow-up maintenance phase, her verbal productivity did increase thus supporting the potential of the eight-week music intervention in developing verbal productivity for Ashleigh and producing carry-over effects upon its removal.
Table 44

Ashleigh mean performance (SD), before, during and after the intervention – total number of utterances

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Intervention</th>
<th>Follow-up</th>
<th>%NOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashleigh</td>
<td>8.0 (2.9)</td>
<td>14.0 (5.1)</td>
<td>17.7 (5.9)</td>
<td>62.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>66.6%</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

Table 45 indicates Ashleigh’s sentence complexity remained somewhat consistent, with only some slight improvements, after her participation in the eight-week intervention. Although Ashleigh’s MLU was most inconsistent during the follow-up phase, her MLU did increase significantly when compared to the intervention phase. The percentage of non-overlapping data (%NOD) supports this as the calculation reports a 100% improvement.

Table 45

Ashleigh mean performance (SD), before, during and after the intervention – MLU in words

<table>
<thead>
<tr>
<th></th>
<th>MLU in words</th>
<th>%NOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashleigh</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Baseline</td>
<td>Intervention</td>
</tr>
<tr>
<td></td>
<td>1.6 (0.5)</td>
<td>2.1 (0.6)</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

5.4.1.4 Deductions for Ashleigh’s Verbal Fluency Development

Triangulation of data (SOLOM, teacher interviews, and SALT-NZAU) reveal Ashleigh’s level of verbal fluency (mazing behaviour) did not change significantly in response to her participation in the eight-week music intervention. Despite the lack of change in her verbal fluency, there were increases in both her verbal productivity and sentence complexity throughout the intervention, which were also maintained upon the removal of the intervention.
These findings were supported by the SOLOM ratings, as Ashleigh’s verbal fluency post-intervention remained within level one, reflecting its fragmentary nature as a result of the mazing behaviour within her speech. Mrs X reported that Ashleigh had made significant improvement to her verbal fluency post-intervention, her statements in regards to this are actually in reference to Ashleigh’s verbal productivity and sentence complexity, thus being that Ashleigh is uttering more words and that her sentences now contain at least four or five words. This supports the data provided by SALT-NZAU (Miller et al., 2016) in Figure 6 in relation to the increase in Ashleigh’s verbal productivity and sentence complexity. The data presented for Ashleigh indicates that her verbal fluency still needs developing. However, it can be proven that her participation in the eight-week music intervention did improve her verbal productivity and sentence complexity.

5.4.2 PROSODY

5.4.2.1 EAL/D Rating Scales

Prior to the intervention, Ashleigh’s level of prosody was scored on the EAL/D Rating Scales by the independent raters at an average of 1.83. This indicates that when speaking English, her intonation patterns do not resemble English prosody. Post-intervention Ashleigh’s score for prosody increased to an average of 2.47, thus moving to a level two whereby she was beginning to demonstrate English language intonation patterns when speaking in English.

5.4.2.2 Teacher Interview

Statements from interviews with Mrs X support the development of Ashleigh’s prosody in spoken English after her engagement with and participation in the music intervention. Prior to the intervention, Mrs X stated that Ashleigh had “no prosody [to her speech] at all [as she was] not speaking long enough to get intonation changes.”
This supports her level one rating on the EAL/D Rating Scales whereby her speech was evidenced as not resembling English prosody at all. Post-intervention participation, Mrs X’s statements support Ashleigh’s development, understanding, and production of prosody when speaking English as “she’s got colour to her speaking … [it is] not monotone, very expressive.” Mrs X even went as far to say that Ashleigh’s “expression is spot on.” Although the EAL/D Rating Scales do not rate Ashleigh as a level five, in which speech would highly resemble English prosody, it was based on one speech sample post-intervention, whereas Mrs X is basing Ashleigh’s development across evidence gathered over the eight-week period with multiple chances to evaluate her level of prosody.

5.2.2.3 Deductions for Ashleigh’s Prosody Development

Data from the EAL/D Rating Scales performed by six independent raters, and statements from teacher interviews with Mrs X reveal and support the development of Ashleigh’s prosody after her engagement with and participation in the eight-week music intervention. The average scores from the blind analysis using the EAL/D Rating Scales evidence Ashleigh’s level of prosody increasing from a level 1 to a level 2 post-intervention. Although her level of prosody still needs development, Mrs X supported Ashleigh’s levels of improvement, as her speech is more expressive with prosodic characteristics being spot on when she verbalises her thoughts. Ashleigh does not engage in any musical activities or lessons outside of the school environment, and does not speak English at home. Consequently, it is plausible that the music intervention did assist in the development of her prosody when speaking English.
5.4.3 PRONUNCIATION

5.4.3.1 Student Oral Language Observation Matrix

Prior to her participation in the music intervention, the average score on the SOLOM that Ashleigh achieved a 2.33, in which her pronunciation was described as “very hard to understand” and “must frequently repeat in order to make him/herself understood.” After the eight-week intervention, Ashleigh’s pronunciation was still rated at a level two, but the average scores had increased slightly from 2.33 to 2.66.

5.4.3.2 EAL/D Rating Scales

From the EAL/D Rating Scales, Ashleigh received an average score of 1.16 for her pronunciation prior to the intervention. At this level, she spoke English with a strong native language accent. After her participation in the intervention, her pronunciations were seen to improve and increase to an average score of 2.33. This new level indicates that she speaks English with her native accent evident. However, she was observed pronouncing English words more accurately and less influenced by her native language accent.

5.4.3.3 Teacher Interview

Interviews with Mrs X support the scores and ratings that were provided for Ashleigh both pre- and post-intervention. Prior to the intervention, Ashleigh’s speech was coherent “only [for] those single word things,” indicating that any speech more than this was unintelligible. This supports the previous ratings as she was very hard to understand by the listener. This could be due to her strong native accent impairing the coherence of her English speech output. Post-intervention, Mrs X indicated that although she is still using gesture to communicate her intended meaning, understanding Ashleigh’s speech had “much improved … absolutely,” supporting the ratings provided in the EAL/D Rating Scales.
5.3.3.4 Deductions for Ashleigh’s Pronunciation

Triangulation of data suggests that Ashleigh’s participation in the eight-week music intervention assisted in the development of her pronunciation skills when speaking English. Although she achieved average scores in the SOLOM pre- and post-intervention with slight improvement (2.33 to 2.66), the EAL/D Rating Scales evidenced Ashleigh’s pronunciation increasing from a level 1 to a level 2. These two sets of data support each other, indicating that Ashleigh still has a native language accent (Tigrinya) when speaking can impede the effectiveness of her verbal communication and requires her to repeat herself. However, she is beginning to speak English with less of her native accent which is an improvement. Statements from the semi-structured interviews conducted with Mrs X provide further support of this slight improvement to Ashleigh’s pronunciation. It was shown that her pronunciation when speaking in English had improved, especially for single or two word ‘things’ she said. However, she would still rely a lot on non-verbal communicative techniques and the listener ‘filling in the gaps’ when speaking. This evidences improvements to her pronunciation, but also confirms that Ashleigh needs further development of her pronunciation.

5.4.4 ASHLEIGH SUMMARY

Ashleigh’s participation in the eight-week music intervention revealed through the triangulation of data that she had improved in both areas of prosody and pronunciation. Data triangulation indicated Ashleigh’s verbal fluency did not change significantly. There were, however, increases in verbal productivity and sentence complexity that were maintained upon conclusion of the intervention.
5.5 MARCUS

Marcus’ father speaks English to a level proficient enough for him to be studying and completing his Doctor of Philosophy in Australia. However, Marcus’ mother does not speak much English – only basic survival words. Despite his father’s English ability, Marcus primarily speaks his native language of Arabic at home. When learning to speak Arabic, Marcus’ mother stated that there were no difficulties with Marcus’ speech.

5.5.1 VERBAL FLUENCY

5.5.1.1 Student Oral Language Observation Matrix

Prior to the music intervention, Marcus’ verbal fluency was rated as a 1.0. At a rating of level one, the definition of verbal fluency demonstrated by the student is that their “speech is so halting and fragmentary as to make conversation virtually impossible.” Post-intervention, Marcus was rated as a 3.23 for his verbal fluency. This increase moved him from a level one to a level three descriptor where his “speech in everyday conversation and classroom discussion [is] frequently disrupted by the student’s search for the correct manner of expression,” as described by the SOLOM.

5.5.1.2 Teacher Interview

Statements from interviews with Mrs X support the development of Marcus’ verbal fluency after the music intervention. Prior to his participation in the intervention, Mrs X stated that there was no fluency to his speech – “Not that fluent; there was none [(verbal fluency)].” However, post-intervention, Mrs X’s opinions align with the increase in ratings on the SOLOM for Marcus’ verbal fluency. She states that his verbal fluency had “absolutely improved.” Although he will only utter two or three words at a time, he is “piecing main words together” when speaking. This further reflects Marcus’ level
three SOLOM rating post-intervention, as he has developed his verbal fluency; however, it is still disrupted frequently when searching for a word, phrase, and/or expression.

5.5.1.3 Systematic Analysis of Language Transcripts (SALT)

Figure 7 presents Marcus’ verbal fluency prior to his participation in the eight-week music intervention, as well as during and afterwards.

![Measure of oracy: Marcus](image)

*Figure 7. Measures of oracy: Marcus – total utterances, mean length of utterances (MLU) in words, and mazes as a percentage of the total words uttered.*

Note: BD = baseline; W = intervention week; FU = follow-up.
Note: W8 not available

**Baseline (A)**

Figure 7 illustrates Marcus’ lack of verbal fluency and consistency when speaking English. This is reflected in his mean score of 25.4 for mazing behaviour, with a standard deviation calculated at 13.9. Similarly, his scores for the total number of utterances reflect the variability in his verbal production throughout this phase (standard deviation of 3.0). Although at a low level (mean score of 1.6), Marcus’ MLU
in words in somewhat stable with a standard deviation score if 0.6. This indicates his consistency in sentence complexity.

**Intervention (B)**

Marcus’ mazing behaviour throughout the intervention phase is seen to steadily increase over four weeks, but then decrease in the final three weeks of the intervention. This evidences slight development in his verbal fluency when considered in relation to his verbal productivity (total number of utterances). Marcus’ verbal productivity developed throughout the duration of the intervention as his mean score increased from 8.3 (baseline) to a 13.9 (intervention). Figure 7 illustrates the steady increase in his total number of utterances from weeks one to six, before decreasing slightly in week seven. Marcus’ level of sentence complexity remained at a relatively steady level throughout the intervention phase, reflected in the standard deviation score of 0.7. However, his MLU scores demonstrated slight improvements from baseline in the final four weeks and thus the increase in sentence complexity. This is evident in the mean scores calculated, as Marcus moved from a 1.6 (baseline) to a 2.5 at the conclusion of the intervention. No data was presented in week eight due to Marcus being taken from the school one week early to return with his family to his home country. Tables 46-48 present numerical data and calculations that support these statements, as well as the percentage of non-overlapping data that reflects the effects of the intervention during this period.

**Follow-up and maintenance**

Data collected revealed the inconsistency in Marcus’ verbal fluency, as his mazing behaviour initially decreased, but then steadily increased over the next two collection points. It is unknown why this occurred as his verbal productivity (total number of
utterances) is the same for the first two scores with the final score reflecting an increase in his verbal output. Marcus’ level of sentence complexity (MLU in words) remains at a somewhat consistent and stable level, revealing slight variation in all three scores post-intervention.

**Calculations from SALT-NZAU data**

Calculations presented in Table 46 demonstrate Marcus’ lack of verbal fluency during both baseline and intervention phases. This lack of verbal fluency is reflected in the high mean and standard deviation scores representing his mazing behaviour and the inconsistency of it. Although decreases were evident during the intervention phase, it was nothing of significance given the variability of his scores. Improvements were evident during the follow-up phase due to both reduced mean and standard deviation scores; however, his verbal fluency is still inconsistent. This data (Table 46) suggests minimal effect was had on Marcus’ verbal fluency as a result of his participation in the eight-week intervention.

Table 46

*Marcus mean performance (SD), before, during and after the intervention – percent maze words*

<table>
<thead>
<tr>
<th></th>
<th>Percent Maze Words</th>
<th>%NOD</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Intervention</td>
<td>Follow-up</td>
<td>Intervention</td>
</tr>
<tr>
<td>Marcus</td>
<td>25.4 (13.9)</td>
<td>18.6 (8.8)</td>
<td>8.4 (4.6)</td>
<td>0%</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

Table 47 indicates potential of the eight-week music intervention on Marcus’ verbal productivity. It did increase during the intervention period when calculations are compared to baseline. However, there was also increased variability in his verbal outputs. The intervention could be considered effective during the follow-up phase with
carry-over effects, as Marcus’ total number of utterances not only increased but remained more consistent.

Table 47

*Marcus mean performance (SD), before, during and after the intervention – total number of utterances*

<table>
<thead>
<tr>
<th></th>
<th>Total number of utterances</th>
<th></th>
<th></th>
<th>%NOD</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Intervention</td>
<td>Follow-up</td>
<td>Intervention</td>
<td>%NOD</td>
<td>Follow-up</td>
</tr>
<tr>
<td>Marcus</td>
<td>8.3 (3.0)</td>
<td>13.9 (5.3)</td>
<td>14.7 (2.9)</td>
<td>57%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

Table 48 calculations supports the minimal effect the intervention had on the development of Marcus’ sentence complexity. Despite an increase in the mean for the intervention period, it can be concluded that sentence complexity remained consistent from baseline to intervention. It can be suggested that the intervention produced carry-over effects as Marcus’ sentence complexity increased and remained consistent during the follow-up phase.

Table 48

*Marcus mean performance (SD), before, during and after the intervention – MLU in words*

<table>
<thead>
<tr>
<th></th>
<th>MLU in words</th>
<th>%NOD</th>
<th></th>
<th></th>
<th>%NOD</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Intervention</td>
<td>Follow-up</td>
<td>Intervention</td>
<td>%NOD</td>
<td>Follow-up</td>
<td></td>
</tr>
<tr>
<td>Marcus</td>
<td>1.6 (0.6)</td>
<td>2.5 (0.7)</td>
<td>3.1 (0.7)</td>
<td>28.5%</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

5.5.1.4 Deductions for Marcus’ Verbal Fluency Development

Triangulation of the three data sets presented (SOLOM, teacher interviews, and SALT-NZAU) indicate an improvement in Marcus’ verbal fluency but to varying levels after his engagement with and participation in the eight-week music intervention. SALT-NZAU scores reveal increases in Marcus’ verbal fluency through the decrease in his mazing behaviour, and increase in total utterances and MLU toward the end of the
intervention. Although mazing behaviour increased over the three follow-up collection points, Figure 8 demonstrates slight improvements to his verbal fluency not only through decreased mean of scores, but consistency of mazing behaviour in the standard deviation calculations. The development of Marcus’ verbal productivity was evident through its steady increase throughout the intervention, and somewhat maintenance of it post-intervention. Although producing rather steady scores, Marcus’ sentence complexity did improve toward the end of the intervention and maintained during the follow-up phase. SOLOM ratings and statements from Mrs X post-intervention indicate improvements supporting the development of his verbal fluency when speaking English. It is recognised, however, that it requires further development despite such improvements after the eight-week intervention.

While it was noted that the effects on Marcus’ verbal fluency were not maintained during the follow-up phase, it could possibly be due to the duration that Marcus had been living in the country. Prior to the intervention, Marcus had only just arrived to the country a few weeks before the intervention commenced and only speaks his native language of Arabic at home, he had minimal exposure to and engagement with the English language, therefore, suggesting that this could have contributed to his decline in verbal fluency during the follow-up period, suggesting that the intervention can affect verbal fluency but may require a longer period of time for maintenance effects to occur.

5.5.2 PROSODY

5.5.2.1 EAL/D Rating Scales

Before participating in the music intervention, Marcus’ level of prosody was scored by the independent raters as an average of 1.83, indicating that his intonation patterns do not resemble English prosody when speaking in English. Marcus’ post-intervention
score confirms an increase in his level of prosody to 2.48, whereby he is beginning to demonstrate English intonation patterns when speaking English.

5.5.2.2 Teacher Interview

This improvement to Marcus' prosody outlined by the scores from the EAL/D Rating Scales is supported by statements from interviews with Mrs X. Marcus produced minimal speech, and minimal levels of prosody, prior to the intervention. Mrs X suggested that this could be observed "in his non-verbal expressions instead of verbally." Post-intervention, Marcus did demonstrate improvements in this specific area, but not to native English-speaker proficiency. He was identified as being "economic with what he’s doing, he’ll make it [his speech] count." This statement from Mrs X does support Marcus’ slight improvement in his English prosody level, reflecting the description of level two on the EAL/D Rating Scales as beginning to demonstrate English intonation patterns in his spoken English.

5.5.2.3 Deductions for Marcus' Prosody Development

Analyses of the data reveals that Marcus’ engagement with and participation in the music intervention increased his level of prosody when speaking English. The blind analysis average score from the EAL/D Rating Scales demonstrate an improvement from level 1 to level 2 post-intervention, for which Mrs X’s statements support. Both these results indicate Marcus still needs to develop his level of prosody to that of a native speaker. However, he is now beginning to recognise, understand, and use prosodic characteristics economically in the speech he does produce.
5.5.3 PRONUNCIATION

5.5.3.1 Student Oral Language Observation Matrix

The average score from the SOLOM provided by the six independent raters was a 1.66, indicating that his pronunciation had “problems so severe as to make speech virtually unintelligibly.” After his participation in the music intervention, Marcus’ average pronunciation score from the SOLOM was seen to increase to 3.0. At level three on the SOLOM, Marcus’ pronunciation could be described as having problems that “necessitate concentration on the part of the listener” because such problems can “occasionally lead to misunderstanding.” Marcus was seen to move from a level one in pronunciation to a level three after his engagement with and participation in the music intervention.

5.5.3.2 EAL/D Rating Scales

The average score calculated for Marcus’ pronunciation from the EAL/D Rating Scales rate his pronunciation as a 0.66. This indicates that Marcus has a very strong native accent when speaking English that his pronunciation of English words is not similar to that of a native speaker in which speech was impaired by his strong Arabic accent. Post-intervention, Marcus’ pronunciation was evidenced as making great improvements, receiving an average score of 2.0. At this level, Marcus’ native accent is still quite evident when speaking English. However, is deemed less of an influence on his pronunciation of English words, therefore, the listener can better understand what he is attempting to say.

5.5.3.3 Teacher Interview

Prior to his participation in the music intervention, Mrs X could not really comment on Marcus’ level of pronunciation when speaking English due to Marcus’ reluctance to speak. He was “an absolute beginner” and would not communicate or interact in
English at all. If he would communicate, it would tend to be the one word ‘survival language’ whereby Mrs X would only understand his intentions as a result of his reliance on non-verbal communicative techniques for support – “he’s using more than just speech, using whole body expression.” Post-intervention, Mrs X did observe some positive change in Marcus’ level of pronunciation; however, it was not as prominent as other student participants. “He still has a long way to go” in regards to developing his English speaking skills to native-like proficiency as he still requires a fair amount of “processing time and more opportunities to speak and develop that.” However, Mrs X confirmed that “he [Marcus] has made some improvement.”

5.5.4.4 Deductions for Marcus’ Pronunciation

As a result of engaging with and participating in the eight-week music intervention, it can be deduced that Marcus did evidence an improvement to his pronunciation skills when speaking in English. All data collected and triangulated in regards to Marcus’ pronunciation development indicate these positive improvements, with SOLOM rating him as a level three, whereby he can be better understood. However, pronunciation difficulties are still evident within his speech and still require the listener to pay close attention to avoid misunderstanding and miscommunication. This aligns with his post-intervention level two score on the EAL/D Rating Scales, as this level reinforces that his pronunciation is still influenced and affected by his native language accent (Arabic). Marcus’ scores for pronunciation are supported by Mrs X, as she declares that he has made some improvements to his pronunciation when speaking in English. However, it is not to the extent of other children and still requires significant development for it to become more native-like. It can be inferred that Marcus’ participation in the eight-week music intervention did assist in the development of his pronunciation skills.
5.5.5 MARCUS SUMMARY

Marcus’ participation in the eight-week music intervention was effective. Although minimal improvements were noted in his verbal fluency, his verbal productivity and sentence complexity increased throughout the intervention and maintained when follow-up data was collected 10 weeks later. Triangulation of data also revealed that Marcus had improved his prosody and pronunciation when speaking the English language, thus further supporting the effectiveness of the music intervention.

5.6 MEGAN

Results from the parent structured interview indicated that Megan’s parents both speak English to a proficient level to effectively communicate with native Australians. However, they do not speak English at home, only Russian. Megan’s mother stated that Megan did not have any difficulty with her speech when learning her native language.

5.6.1 VERBAL FLUENCY

5.6.1.1 Student Oral Language Observation Matrix

The average scores calculated for Megan’s verbal fluency were a 3.0 prior to her participation in the music intervention. A score of 3.0 indicates that her every day and classroom speech may be characterised as being frequently “disrupted by the student’s search for the correct manner of expression.” Post-intervention, Megan’s verbal fluency was calculated at an average score of 4.08. This increase in score indicates improvement in her verbal fluency in which her speech is now described as generally fluent; however, still contains occasional lapses due to the need to search for the correct word, phrase, or expression.
5.6.1.2 Teacher Interviews

Megan’s verbal fluency improvement is supported by statements from Mrs X. Prior about her participation in the intervention, Mrs X described Megan’s speech as “very slow and not fluent at all.” Although her speech was coherent, there was “a lot of pause and wait time… she [would] pause basically every one or two words when trying to find the word.” Mrs X noticed improvements to Megan’s verbal fluency after her engagement with and participation in the eight-week music intervention. Mrs X stated that Megan’s speech was “far more proficient” and that she “speaks [English] more quickly and more naturally.” These statements support the improvement in Megan’s verbal fluency as a result of her participation in the eight-week music intervention.

5.6.1.3 Systematic Analysis of Language Transcripts (SALT)

Figure 8 presents the data collected over three phases (baseline, intervention, follow-up) within this research project to assess the effectiveness of the music intervention in developing Megan’s verbal fluency in English. MLU in words to total number of utterances are included as they could support Crystal’s (1987) ‘bucket theory’ whereby development in one area (mazing behaviour) is minimal or non-existent as a result of improvements to other areas.
**Baseline (A)**

*Figure 8. Measures of oracy: Megan – total utterances, mean length of utterances (MLU) in words, and mazes as a percentage of the total words uttered (% maze words).*

Note: BD = baseline; W = intervention week; FU = follow-up.

Figure 8 illustrates that although Megan’s mazing behaviour was seen to steadily decrease over three data collection points, her verbal fluency was still deemed inconsistent. This is reflected in the standard deviation calculation of 6.4 for her mazing behaviour. Megan’s total number of verbal utterances during this phase rose steadily over the four collection points, indicating verbal productivity growth. Similarly, the steady increase in Megan’s MLU in words demonstrated her use of more complex sentences at each collection point.
**Intervention (B)**

During the intervention, Megan’s level of verbal fluency remained inconsistent as her mazing behaviour was seen to fluctuate at each collection point with no discernible pattern. This inconsistency is reflected in her standard deviation score of 3.0. Although the majority of scores for Megan’s total verbal utterances were calculated as being higher than those during the baseline phase, they too fluctuated throughout this intervention period, demonstrating the inconsistency in her verbal productivity (standard deviation of 4.4). Despite MLU scores reflecting a good level of sentence complexity over the eight weeks, these levels were not stable or consistent throughout this intervention phase as variability was evident in Megan’s MLU scores. The standard deviations presented in Tables 49-51 highlight the continued fluctuation in Megan’s scores for verbal fluency and productivity. The tables also show the slight improvement in Megan’s verbal fluency and productivity through her mean performance.

**Follow-up and maintenance**

Figure 8 demonstrates the inconsistency in Megan’s verbal fluency post-intervention as her mazing behaviour. Her standard deviation score of 8.4 reflects the variability in her performance. Megan’s verbal productivity was also inconsistent during this follow-up phase, supported by a standard deviation score of 7.2. Her total number of utterances initially decreased from the intervention phase, yet increased over the next two collection points with no discernible pattern. Megan’s sentence complexity cannot be considered consistent or stable during this phase, and is reflected in her standard deviation score of 2.7.
Calculations from SALT-NZAU data

Calculations presented in Table 49 outline minimal improvements to Megan’s verbal fluency after participation in the eight-week music intervention. This is reflected in the decrease of mazing behaviour and more consistency across scores. No maintenance effects were evident as her mazing behaviour increased as was its level of inconsistency. These calculations suggest that the eight-week music intervention has minimal effect on Megan’s verbal fluency.

Table 49

Megan mean performance (SD), before, during and after the intervention – percent maze words

<table>
<thead>
<tr>
<th>Percent Maze Words</th>
<th>%NOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>Intervention</td>
</tr>
<tr>
<td>Megan</td>
<td>13.5 (6.4)</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

Table 50 presents the calculations for Megan’s verbal productivity across the three time points of this research. There was an increase in the number of verbal utterances from baseline to post-intervention. However, the number of utterances decreased at the follow-up assessment. This data suggests that her verbal productivity did increase over the eight-week intervention, yet decreased 10 weeks post-intervention.

Table 50

Megan mean performance (SD), before, during and after the intervention – total number of utterances

<table>
<thead>
<tr>
<th>Total number of utterances</th>
<th>%NOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>Intervention</td>
</tr>
<tr>
<td>Megan</td>
<td>18.3 (2.1)</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.
Table 51 indicates there was a change in Megan’s sentence complexity throughout her participation in this research; however, these changes cannot be considered significant. Sentence complexity during the intervention phase remained at a similar level to the baseline phase, but a slight increase in score consistency was evident. The mean calculation for the follow-up phase suggested potential carry-over effects of the intervention. However, the standard deviation indicated increased score inconsistency, reflecting the outlier presented in Figure 8. From these calculations, it supports the notion that Megan’s participation in the eight-week music intervention did not increase her sentence complexity.

Table 51

Megan mean performance (SD), before, during and after the intervention – MLU in words

<table>
<thead>
<tr>
<th></th>
<th>MLU in words</th>
<th>%NOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Intervention</td>
</tr>
<tr>
<td>Megan</td>
<td>5.4 (1.4)</td>
<td>5.2 (1.0)</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

5.6.1.4 Deductions for Megan’s verbal fluency

Triangulation of the three data sets (SOLOM, teacher interviews, and SALT-NZAU) confirms the differences in the level of Megan’s verbal fluency after her participation in the music intervention. The data calculated by SALT-NZAU (2016) and illustrated in Figure 8 reveals that her mazing behaviour was rather inconsistent throughout all three phases of data collection with no apparent trend or pattern. Although slight improvements in Megan’s verbal fluency is evident in the mean calculations presented in Table 49, the effects of the intervention were not maintained after its removal as her mean performance for mazing behaviour increased.
Megan’s sentence complexity (MLU in words) also reflected variability in scores across the intervention and follow-up phases, in which this inconsistency indicates no improvements in or stabilisation of her level of sentence complexity. It was evident, however, that Megan’s verbal productivity increased throughout the intervention period despite the fluctuation in her total number of utterances each week. Whilst this is reflected in the intervention phase, this was not maintained when the intervention was removed, as follow-up scores evidence a significant decrease and then score variability with no pattern or trend. Calculations presented in Table 9 reflect this decline in performance post-intervention as her mean performance decreased and standard deviation increased.

SOLOM ratings and statements from Mrs X seem to contradict the data calculated using SALT-NZAU (2016) in regards to the development of Megan’s verbal fluency. They both suggest that Megan’s verbal fluency when speaking English had developed after her participation in the eight-week music intervention to a level that is generally fluent and more natural with only occasional lapses in speech. The data provided by SALT-NZAU captured one language sample per week, whereas Mrs X interacted with Megan daily as her teacher, which could explain why she reports Megan’s demonstrated improvement in her level of verbal fluency. The Hawthorne Effect could also be a potential explanation as to why Mrs X perceived improvements in Megan’s verbal fluency as Megan could have realised she was being assessed and demonstrated higher levels of verbal fluency in front of Mrs X more frequently than the single weekly measure collected by the researcher.

It can be suggested that Megan’s performance throughout the data collection phase was inconsistent and varied frequently due to her need to communicate in both English and her native language (Russian) every day. Her mother reported in the
structured interview that Megan learns and speaks English at school, but when at home, they only communicate in Russian. Megan’s current use of the English language is only within the school environment in which her learning of the language is not practised or reinforced at home, which could suggest the verbal fluency inconsistencies in the data presented by SALT-NZAU (2016). It is recognised that the effects of the intervention for Megan provide no set pattern or trend in the SALT-NZAU (2016) data. However, it can be noted that her verbal productivity improved throughout the music intervention, but worsened upon its removal.

5.6.2 PROSODY

5.6.2.1 EAL/D Rating Scales

Prior to Megan’s participation in the music intervention, the independent raters provided an average score of 2.66 for Megan’s level of prosody when speaking English. This level indicates that she was beginning to demonstrate intonation patterns that resemble those expected for spoken English. However, significant development is still required for her to achieve native-like prosody levels. After her engagement with and participation in the music intervention, Megan’s average score for prosody increased to 3.33. This increase demonstrates the development of her level of prosody whereby her spoken English somewhat resembles English prosody.

5.6.2.2 Teacher Interview

The semi-structured interview with Mrs X supports both pre- and post-intervention data provided by the EAL/D Rating Scales. Prior to her engagement with and participation in the music intervention, Megan’s level of prosody was described by Mrs X as “very monotone and not many inflections unless she repeats a learned phrase.” Consequently, her speech was not considered native-like due to the lack of prosodic characteristics expected within spoken English. This supports the average score
provided by the independent raters from the EAL/D Rating Scales, as it highlights that Megan’s speech is not completely void of expression and intonational changes, some intonation patterns are evident in her speech. However, these are minimal and have the tendency to occur when repeating a set phrase that has demonstrated where these changes should occur, not Megan recognising and producing them herself.

After Megan’s engagement with and participation in the music intervention, Mrs X observed an increase in her level of prosody when speaking English. It was stated “the whole of her [Megan’s] language has improved,” with the “range of her expression [being] much broader.” Despite her improvements, it was noted by Mrs X that the development in Megan’s level of prosody was challenging to identify, in which Mrs X believes is as a result of her native language (Russian). Her spoken English is seen to contain inflections, but “it doesn’t seem to have the levels of emotions and range other children do… it’s not as expressive.” Although her level of prosody improvement was not as noticeable and significant as the other student participants, Mrs X highlighted that “it is just a matter of time” for Megan’s level of prosody in spoken English to continue to develop. These statements from Mrs X in regards to Megan’s prosody development align with the post-intervention score provided on the EAL/D Rating Scales by the independent raters. Megan’s prosody moved from a level two to three on the EAL/D Rating Scales, reflecting an improvement after her participation in the intervention. However, she is only using basic intonation patterns that resemble the English language, in which further practise and development is needed to attain native-like prosody levels.

5.6.2.3 Deductions for Megan’s prosody

Based on the two data sources used to analyse Megan’s level of prosody in the English language, her participation in the eight-week intervention assisted in the development
of her prosody in spoken English. The EAL/D Rating Scales report Megan’s level of prosody increased from a level two to level three, indicating that she is using intonation patterns that somewhat resemble those in spoken English. This increase was supported by Mrs X’s comments as she agreed that Megan has progressed in terms of her level of prosody. However, it is still not as expressive in terms of intonation range and the emotion that one would expect when hearing the English language. Despite this, the data presented indicates that Megan has improved her level of prosody as a result of the eight-week music intervention.

5.6.3 PRONUNCIATION

5.6.3.1 Student Oral Language Observation Matrix (SOLOM)

Using the SOLOM, the six independent raters provided Megan with an average score of 3.33 for her pronunciation prior to her engagement with and participation in the intervention. At this level, her pronunciation was described by SOLOM as requiring “concentration on the part of the listener” as she had difficulty with her pronunciation that could occasionally lead to a misunderstanding. After her participation in the intervention, Megan’s average score increased slightly to 3.83 and remained within the level three range on SOLOM. This score marks some increase in Megan’s pronunciation post-intervention. However, active listening is needed by others as misunderstandings due to pronunciation problems can occur.

5.6.3.2 EAL/D Rating Scales

Using the EAL/D Rating Scales, the average score calculated for Megan’s pronunciation prior to her engagement with and participation in the intervention was a 2.0. At this level, Megan’s native language accent (Russian) is found to be prominent, affecting her pronunciation of words in the English language. Post-intervention, her average score from the independent raters increased to a 2.75. Although still within
the same level, it does indicate that her native accent is still evident when speaking English. However, it is less of an influence on her pronunciation of English words, making it easier for the listener to understand what she is attempting to say.

5.6.3.3 Teacher Interviews

The semi-structured interviews with Mrs X support the scores and ratings provided in regards to Megan’s pronunciation pre- and post-intervention. Prior to the intervention, Megan’s spoken English was described as “strong with a Russian accent.” Even though her native language of Russian significantly influenced her pronunciation, Mrs X stated that it was “still understandable.” These statements from Mrs X support the average scores provided by SOLOM and the EAL/D Rating Scales, as they reflect the influence of her native language and how it affected her pronunciation in English. Post-intervention, Mrs X indicated “she articulates very well” and has no difficulty understanding what she is attempting to verbally communicate – “I can understand her far more.” Although Mrs X recognises the improvement in Megan’s pronunciation when speaking English, “there is [still] some influence from Russian with her vowels and that.” This reflects the slight improvement in Megan’s average scores on both the SOLOM and EAL/D Rating Scales. Her pronunciation had improved; however, it still requires further development as her native language accent of Russian continues to have a strong influence on certain sounds in the English language.

5.6.3.4 Deductions for Megan’s pronunciation

Triangulation of the data suggests that after participating in the eight-week music intervention, it aided in the slight improvement of Megan’s pronunciation skills when speaking English. Both average scores from the SOLOM (3.33 to 3.83) and EAL/D Rating Scales (2.0 to 2.75) from pre- to post-intervention evidence an improvement in Megan’s pronunciation skills in English; however, they remained within the same level.
These documents support each other by highlighting slight increases to Megan’s pronunciation, but not significant enough to move to the next level as a result of her native accent still having a certain degree of influence and effect on her pronunciation of certain words and sounds in the English language. Statements from Mrs X obtained through the semi-structured interviews are more supportive of Megan’s pronunciation development. Whilst Mrs X recognises the influence of Megan’s Russian accent on her pronunciation skills, it is further revealed that she has noticed quite a difference in Megan’s pronunciation skills. This oddly supports and refutes the scores from SOLOM and the EAL/D Rating Scales, as the Russian accent does have a certain degree of influence on her pronunciation, but over a period of time when Mrs X interacted with Megan on a daily basis at school, it is recognised that her pronunciation has advanced more than what the scores from SOLOM and the EAL/D Rating Scales indicate. This is due to the average scores being based on one pre- and one post-intervention recording, not eight weeks of daily interaction with Megan like Mrs X had to observe and assess her pronunciation development.

5.6.4 MEGAN SUMMARY

Data indicates Megan’s participation in the eight-week music intervention was effective in improving her prosody and pronunciation when speaking English. However, there were mixed results when triangulating the data for her verbal fluency. The lack of improvement to Megan’s verbal fluency could be a reflection of Crystal’s (1987) ‘bucket theory’ as her total number of utterances improved throughout the intervention, and her MLU in words increased during the follow-up phase. This suggests additional research is needed in order to further examine in more depth the effects of such a music intervention on the development of her verbal fluency.
5.7  MICHAEL

Michael’s parents both speak basic English, and shared in the structured interview that they tend to speak both Bengali and English at home as they realise the importance of Michael learning English due to it being the native language of Australia. Michael’s parents stated that he had no speech difficulties when trying to learn his native language. However, they did feel he has the tendency to rush when he speaks which affects his pronunciation.

5.7.1  VERBAL FLUENCY

5.7.1.1  Student Oral Language Observation Matrix

The average SOLOM scores calculated from the ratings by the three SLPs and three QRTs indicate that prior to the music intervention, Michael’s verbal fluency was rated as a 2.63. At a rating of level two, the definition of verbal fluency demonstrated by the student is that their speech is “usually hesitant; [and they are] often forced into silence by language limitations.” Post-intervention, Michael was rated as a 3.3 for his verbal fluency. This increase moved him from a level two to a level three descriptor where his “speech in everyday conversation and classroom discussion [is] frequently disrupted by the student’s search for the correct manner of expression,” as described by the SOLOM.

5.7.1.2  Teacher Interview

Prior to the intervention, Mrs X stated that Michael’s speech in the English language was “not that fluent” in which he had “a lot of wait time … [and] a lot of filled pauses;” he would start a sentence but then pause to think. Mrs X indicated that post-intervention, Michael was “so eager to talk [and] has a lot he wants to share and say.” Mrs X’s continues to state that his speech “come out in blurs, [he’ll] think again, then
come out in blurs again,” thus reflecting the frequent disruption of his speech when searching for the correct or appropriate word or expression. Despite this, Mrs X did indicate that “there has still been growth” to Marcus’ verbal fluency, “but [it] still needs work.”

5.7.1.3 Systematic Analysis of Language Transcripts (SALT)

Michael’s language samples were analysed using SALT-NZAU (2016) in which Figure 9 presents the data in regards to his verbal fluency pre-intervention, during, and post-intervention for three areas: total number of utterances, MLU in words, and percentage of maze words.

![Figure 9. Measures of oracy: Michael – total utterances, mean length of utterances (MLU) in words, and mazes as a percentage of the total words uttered (% maze words).](image)

**Baseline (A)**

Figure 9 indicates Michael’s low levels of verbal fluency when speaking in English as there was variability in his mazing behaviour, and thus no discernible pattern or trend, throughout the baseline phase. This is reflected through a standard deviation score of
4.3. Michael’s total number of utterances increased over each of the four collection points, but there is no pattern evident. There was, however, a fairly stable performance in Michael’s level of sentence complexity with a standard deviation of 0.5. Tables 52-54 provide the quantitative calculations to reflect these statements.

**Intervention (B)**

Results throughout the intervention reveal the lack of development in Michael’s verbal fluency (standard deviation of 3.1). Although producing high scores, Michael’s verbal productivity is also considered inconsistent as his total number of utterances fluctuates throughout the intervention with no apparent trend of pattern. This is reflected through the standard deviation score of 22.9. Michael’s MLU in words remained relatively stable throughout the intervention period, with only slight increases to his sentence complexity evident in the final two weeks. The mean performance and standard deviations calculation and presented in Tables 52-54 reflect these statements. Additionally, the percentage of non-overlapping data indicates the (in) effectiveness of the intervention for each of the three areas for this period.

**Follow-up**

Although results in Figure 9 evidence the steady decrease in Michael’s mazing behaviour post-intervention, his mean score for mazing behaviour was 26.2, indicating no improvements to his verbal fluency during this phase. His level of verbal productivity remains inconsistent as a result of the fluctuation in scores across the three data sets (standard deviation of 17.2). Michael evidenced slight increases to his sentence complexity (MLU) post-intervention and it remained relatively consistent throughout all three data collection points during this phase, thus evidencing the maintenance effects of the intervention upon its removal. This is reflected in his standard deviation of 2.7.
Calculations presented in Tables 52-54 reflect these statements through Michael’s mean performance and the spread of his scores from the mean (standard deviation). The percentage of non-overlapping data calculations in Tables 52-54 also reveal the (in) effectiveness of the intervention during this period.

**Calculations from SALT-NZAU data**

Table 52 reflects the lack of improvement in Michael’s verbal fluency after participating in the eight-week music intervention. Although slight improvements to consistency of scores, the intervention phase calculations reveal increased mazing behaviour and lack of improvement to verbal fluency. This mazing behaviour continued to increase during the follow-up phase further reflecting lack of improvement. However, the standard deviation score indicates increased level of consistence with Michael’s mazing behaviour when speaking. From these calculations, it can be suggested that whilst there was no quantitative evidence to indicate improvements to Michael’s verbal fluency, his mazing behaviour did become slightly more consistent.

<table>
<thead>
<tr>
<th>Percent Maze Words</th>
<th>%NOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>Intervention</td>
</tr>
<tr>
<td>Michael</td>
<td>16.9 (4.3)</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

Table 53 outlines the positive effects the intervention had on Michael’s verbal productivity. Although the standard deviation increased from baseline to intervention phase, the intervention mean outlines an improvement in Michael’s total number of utterances. Although the average number of utterances decreased during the follow-up phase, this score was still significantly higher than the baseline phase and scores were more consistent. These calculations indicate that the intervention had a positive
effect on the development of Michael’s verbal productivity during the intervention and after its removal.

Table 53

*Michael mean performance (SD), before, during and after the intervention – total number of utterances*

<table>
<thead>
<tr>
<th></th>
<th>Total number of utterances</th>
<th>%NOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Intervention</td>
</tr>
<tr>
<td>Michael</td>
<td>38.0 (18.8)</td>
<td>71.3 (22.9)</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.

Calculations presented in Table 54 indicate the improvement of Michael's sentence complexity after his participation in the music intervention. Improvements to sentence complexity were evident from baseline to intervention phase through the increased mean and more consistency with scores. However, these were only minor changes and not significant, yet they still indicate the potential of the eight-week intervention. Scores for the follow-up phase suggest carry-over effects of the intervention as Michael's mean score increased and can be considered somewhat reliable given the consistency of scores (standard deviation). These results suggest the eight-week intervention increased Michael’s sentence complexity, in which its effects continued upon the removal of the intervention.

Table 54

*Michael mean performance (SD), before, during and after the intervention – MLU in words*

<table>
<thead>
<tr>
<th></th>
<th>MLU in words</th>
<th>%NOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Intervention</td>
</tr>
<tr>
<td>Michael</td>
<td>4.0 (0.5)</td>
<td>4.5 (0.4)</td>
</tr>
</tbody>
</table>

Note: %NOD = percent non-overlapping data: >90% = very effective; 70-90% = effective; 50-70% = questionable; <50% = ineffective.
5.7.1.4 Deductions for Michael’s verbal fluency

Triangulation of the three data sets (SOLOM, teacher interview statements, and SALT-NZAU) support that Michael’s participation in the eight-week music intervention yielded minimal improvements to his verbal fluency, but nothing of significance. Although his verbal fluency development did not change, there were improvements to his verbal productivity as the majority of his utterances were higher than those recorded during the baseline period. Additionally, Michael demonstrated an increase in the complexity of his sentences throughout the intervention, which was not only maintained upon its removal, but also improved and remained at a somewhat stable level when follow-up data was collected. Considering the increase in verbal productivity and sentence complexity, it can be suggested that Michael’s mazing behaviour increased due to him not only attempting to speak more, but utter more linguistically complex sentences, thus affecting the results of his verbal fluency.

The statements from Mrs X and the SOLOM ratings support the slight development in Michael’s verbal fluency; however, also indicate that it is nothing of significance and that it still requires development. They also support the development of his verbal productivity and sentence complexity, as they outline that Michael no longer feels the need to remain silent as a result of his language limitations, but continues to have disrupted speech potentially as a result of attempting to verbalise more complex expressions. It is suggested that Michael’s engagement with and participation in the music intervention did not have a significant effect on his verbal fluency, but had more of an effect on his verbal productivity and sentence complexity.
5.7.2 PROSODY

5.7.2.1 EAL/D Rating Scales

Prior to the music intervention, the independent raters provided Michael's prosody with an average score of 2.48, indicating that his spoken English was beginning to demonstrate English intonation patterns. Post-intervention, Michael's average score for prosody on the EAL/D Rating Scales increased to 4.13. This level indicates that Michael's intonation patterns in spoken English resemble English prosody.

5.7.2.2 Teacher Interview

Mrs X's statements support the average scores provided by the independent raters on the EAL/D Rating Scales. Before his participation in the music intervention, Mrs X stated that Michael's spoken English exhibited “basic prosody, but not a lot due to pauses and wait time frequency.” This is reflected by Michael's level two EAL/D rating whereby he was beginning to demonstrate English intonation patterns when speaking English. Mrs X noted the improvement in Michael's level of prosody after his engagement with and participation in the music intervention, stating “You can tell it's more colourful and lively in regard. [It is] more expressive I'd say that.” Such statements reflect Michael's post-intervention average rating at a level four whereby his spoken English evidences intonation patterns that resemble English prosody.

5.7.2.3 Deductions for Michael's Prosody Development

Both the EAL/D Rating Scales and statements from the semi-structured interviews support an increase in Michael's level of prosody when speaking English with Mrs X. The EAL/D Rating Scales indicated an improvement from level 2 to level 4 after Michael's participation in the eight-week music intervention. Mrs X's statements support his development of prosody, as his speech in English is more lively, colourful, and expressive when compared to that prior to the intervention. From interviews with
Michael's parents, it was learned that both English and their native language of Bengali are spoken in their home environment. Michael’s additional exposure to and use of the English language outside of the case site could have potentially influenced such development in his level of prosody. Michael does not engage in any formal music lessons outside those generalise lessons offered at the case site. However, he is observed by his parents as frequently singing and enjoying music and musical activities. The use of music as a vehicle may have further enhanced Michael’s enjoyment of music and his engagement with the intervention. Additionally, his singing and engagement with music in general may have allowed him to already be exposed to and have subconsciously practised or rehearsed a range of tonal and rhythmic patterns prior to the intervention, in which the intervention then enhanced his music vocabulary. It is suggested that the combination of his enjoyment and occasional engagement with music, and his participation in the eight-week music intervention transferred to his speech in which his levels of prosody when speaking English were enhanced.

5.7.3 PRONUNCIATION

5.7.3.1 Student Oral Language Observation Matrix

Prior to his participation in the intervention, the average score from SOLOM for Michael was a 2.66. At this level, his speech is described by SOLOM as “very hard to understand because of pronunciation problems. [He] must frequently repeat [himself] in order to make himself understood.” Post-intervention, the average score calculated for Michael’s pronunciation from the six independent raters evidence that it had increased to a score of 3.33. Moving to a level three indicates improvement to Michael’s pronunciation skills. However, it is not perfect and “necessitate[s]
concentration on the part of the listener” as it can “occasionally lead to misunderstanding.”

5.7.3.2 EAL/D Rating Scales

The average score calculated for Michael’s pronunciation using the EAL/D Rating Scales prior to his participation in the intervention was a 3.0. A level three indicates that when he speaks English and pronounces English words, it is with a moderate native language accent. Post-intervention evidenced a slight improvement to his average score, now a 3.33. However, it remained within the same level whereby his speech and pronunciation in English is still with a moderate native language (Bengali) accent.

5.7.3.3 Teacher Interview

Statements from the semi-structured interviews with Mrs X support the ratings provided by the SOLOM and EAL/D Rating Scales in regards to Michael’s pronunciation pre- and post-intervention. Prior to the intervention, Mrs X stated that when Michael was communicating in English, “you [would] have to pay attention to try to understand what he’s trying to let you know. You have to pause and have that wait time.” This aligns with SOLOMs definition of Michael’s pronunciation making his speech very hard to understand. Post-intervention, Michael’s average scores did increase, but not significantly, and this is support by comments from Mrs X in regards to Michael’s pronunciation – “he’s making gains, but not as significant as the others are.” In saying this, Mrs X did note that every child is an individual and both learn and develop at different rates as a result of varying factors, therefore suggesting that Michael potentially had not made as significant improvements in his pronunciation due to “[the] mannerisms of how he speaks” in his native language.
5.7.3.4 Deductions for Michael’s Pronunciation

Triangulation of data suggests that Michael’s level of pronunciation when speaking in English improved as a result of his participation in the music intervention. The SOLOM and EAL/D Rating scales provided average scores for Michael of a 2.66 and 3.0, respectively, prior to the intervention. However, post-intervention ratings from the blind analysis indicate that Michael scored a 3.33 on both the SOLOM and EAL/D Rating Scales. This indicates that he is speaking and pronouncing English words, phrases, and sentences with a moderate native language accent (Bengali); however, his speech is better understood by the listener. Mrs X’s statement support such development in pronunciation levels, yet suggests that it still needs work and is not as significant as other students potentially due to speech mannerisms in his first language, thus influencing the level of improvement in his English pronunciation. Although Michael’s pronunciation requires further development, it can be suggested that his participation in the music intervention has affected his pronunciation to a small degree when speaking in English.

5.7.4 MICHAEL SUMMARY

Michael’s participation in the music intervention did not yield any significant improvements to his verbal fluency. It did, however, increase his verbal productivity and sentence complexity over the eight weeks, but this was not maintained upon the removal of the intervention. Triangulation of data further indicates that Michael demonstrated improved levels of prosody and pronunciation when speaking English after the eight-week intervention, thus demonstrating its potential.
5.8 SUMMARY OF FINDINGS – VERBAL FLUENCY, PROSODY AND PRONUNCIATION

5.8.1 Verbal Fluency

Within the IEC, students are encouraged to use the English language within a range of contexts including pair, small group and whole class discussions, as well as one-on-one interactions with the teacher. From the interviews with the IEC staff participant, it was evident that prior to the implementation of the music intervention, all students demonstrated low levels of fluency. What verbal utterances and expressive English they did produce was filled with many pauses, with students making use of wait/process time so as to gather their thoughts, or resorting to non-verbal communication techniques in an attempt to make meaning if they were unable to code switch. Any English that participants attempted to use would be single or two word phrases, simple ‘survival English’, to communicate and express their immediate wants and/or needs. Only one student (Abraham) exhibited more fluent speaking behaviours. However, wait/process time was still required, and pauses did remain within his speech.

Analysing the three data sources for verbal fluency (SOLOM, teacher interviews, and SALT-NZAU) reveals that the music intervention had mixed results on the development of students’ verbal fluency. While interviews with the IEC staff participant (Mrs X) reveal all students made progress in their verbal fluency, some statements were actually in regards to the improvement in students’ verbal productivity and/or sentence complexity and not their verbal fluency. The quantitative data provided by SALT-NZAU (2016) supports teacher statements in regards to the slight developments in some students’ verbal fluency, but more significantly the development of all
students’ verbal productivity and sentence complexity throughout the eight-week music intervention. Maintenance effects of the intervention were also evident for some students during the follow-up phase; however, others decreased though results did not revert to baseline levels. This is supported by calculations from the SALT-NZAU data that provided participant mean, standard deviation, and percentage of non-overlapping data that indicated the lack of verbal fluency development after their participation in the eight-week intervention, yet improvements in verbal productivity and sentence complexity. The SOLOM supports the data provided by teacher statements and SALT-NZAU (2016), suggesting that the intervention did not have a significant impact on the development of the verbal fluency in students who have English as an additional language or dialect (EAL/D), but did positively impact their verbal productivity and sentence complexity.

5.8.2 Prosody

Prior to the intervention, the majority of student participants demonstrated minimal to no prosodic characteristics within their speech. This may be due to lack of extensive communication, and/or that their speech was filled with a number of pauses and wait time, when students did speak, their verbal behaviours were described as monotone with no pitch inflection(s) or stress emphasis. These participants did not exhibit prosodic behaviours within their speech in the English language that could be classified as similar or the same as a native English speaker. Mrs X did identify one student (Abraham), who initially displayed higher levels of prosody in the English language than the other participants. A plausible explanation might be that Abraham had been living in Australia for a longer period of time than any of the other student participants. This translates to higher exposure to and interaction in the English
language, which may have influenced his level of prosody in comparison to other student participants.

Post-intervention, it was evident from teacher interviews with Mrs X that all students “have absolutely improved” their levels of prosody in their speaking of the English language. However, it was Michael who demonstrated the greatest improvement in his level of prosody after his engagement with and participation in the music intervention, achieving the highest average score of 4.13. A potential reason for this could be due to his native language of Bengali being pitch-accented, where close attention needs to be paid to the subtle changes in the pitch and stress of certain words as different meanings can be produced as a result. Further, his enjoyment of and occasional engagement with music outside of the classroom context could have enhanced his engagement and participation in the lesson, which in turn is reflected in the development of his prosody when speaking English.

5.8.3 Pronunciation

Prior to their engagement with and participation in the music intervention, all students were demonstrating poor pronunciation skills when speaking in English that severely impaired their speech. It was evident that the students’ native language accent was prominent and influenced and affected their English speech. Consequently, it made it difficult for the listener to understand what they were attempting to verbally communicate, in which misunderstandings would be more likely to occur as a result. No student participant was identified through the SOLOM or EAL/D Rating Scales, or mentioned by Mrs X as demonstrating a high level of English pronunciation prior to their engagement with and participation in the music intervention. However, Mrs X did state that Megan had a native language (Russian) that was very distinct and heavily influenced her verbal communication and pronunciation in English. It was evident in
the pre-intervention data that the five participants who had been living in Australia for six months or more received similar scores to each other, and significantly higher than Marcus who had only recently arrived in Australia weeks before his participation in the music intervention.

Post-intervention saw an increase, even though nominal, in the pronunciation level of all students. Megan and Alex were evidenced as increasing their average score, yet remained within the overall ‘whole’ level provided by SOLOM and EAL/D Rating Scales. However, Abraham, Ashleigh and Michael were seen to move to the level higher in either one of both of the analysis documents (SOLOM and the EAL/D Rating Scales). Marcus, however, evidenced more noticeable improvements by moving up two levels on both SOLOM (1.66 to 3.0) and the EAL/D Rating Scales (0.66 to 2.0). This proposes the potential of the music intervention assisting in the development of foundational pronunciation sounds of the English language for someone who has had limited exposure to and experience with the language. Although small improvements in pronunciation were made for the other five student participants, the music intervention to develop the pronunciation skills when speaking in English after only eight weeks of the intervention holds potential.

5.9 EDUCATION QUEENSLAND EAL/D BANDSCALES

Students with EAL/D in the Australian state of Queensland are assessed on the four skills of speaking, listening, reading, and writing using the Bandscales State Schools (Queensland) for EAL/D learners (Education Queensland, 2017) prior to their commencement within a Queensland school. Throughout their academic journey, students will continue to be assessed using this government document across the four skills in order to map their learning progression. This document was used for all
student participants in this research pre- and post-intervention by the staff participant (Mrs X). As this research focussed on investigating levels of oracy in students with EAL/D, the skills of ‘speaking’ and ‘listening’ have only been reported. Table 5 outlines the results across these two domains, before being discussed for each individual student.

Table 5

<table>
<thead>
<tr>
<th>Participant</th>
<th>Listening</th>
<th>Speaking</th>
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<td></td>
<td>Pre</td>
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<td>Ashleigh</td>
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<td>Michael</td>
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<td>Abraham</td>
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<td>Alex</td>
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<td>Megan</td>
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<td>4</td>
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<tr>
<td>Marcus</td>
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Notes: Level 1 indicates that the student is new to Standard Australian English (SAE) (Education Queensland, 2017). Levels 5 and 6 indicate that the student is (a) consolidation comprehension of SAE and becoming competent in SAE (listening); and (b) consolidating the use of SAE and becoming competent in SAE (speaking) (Education Queensland, 2017).

5.9.1 ABRAHAM

Abraham demonstrated a high level in both ‘Listening’ and ‘Speaking’ prior to the intervention. At level 4, he was observed to “undertake some learning through SAE” (Education Queensland, 2017, p. 4). When listening to task explanations and instructions, Abraham was able to follow the material if presented and explained slowly, as well as easily comprehend social SAE with occasional assistance if used within a familiar context (Education Queensland, 2017). Despite spoken fluency at a surface level and gestures that indicate comprehension (e.g. nodding), constant scaffolding was required as he missed the more precise details of speech, as well as basic information if background noise is present (Education Queensland, 2017).
While able to participate in some classroom talk, routine exchanges, and initiate one-on-one verbal interactions in regards to familiar and classroom topics, Abraham still required contextual support from the listener (Education Queensland, 2017). Although Abraham was observed as being able to provide short responses that go beyond two-three word utterances, wait and process time was needed and/or preferred before providing a verbal response in English.

Post-intervention, Abraham’s listening skills were consolidated and remained at a level 4. However, his score for his speaking ability increased to a level 4. At this level, Abraham is seen as developing his Standard Australian English (SAE) whereby he is now attempting to verbally express “complex thoughts and feelings in English” but continues to rely on the attentiveness of the listener to ensure his message is effectively communicated (Education Queensland, 2017, p. 5). Although his speech may contain errors due to approximations to SAE forms and thus relying on listener attentiveness, the intended meaning that Abraham is attempting to communicate is generally unimpeded (Education Queensland, 2017). This level of speaking ability evidences Abraham being able to provide short talks in front of the class, sustain a conversation on familiar topics, and provide short answers to single-clause questions. However, explicit details may not be provided, and speech may be somewhat fragmented for longer discourses (Education Queensland, 2017).

5.9.2 ALEX

At level 1 in the domain of ‘Listening’, Alex is observed as only understanding isolated key words when provided with a context and supported by other non-verbal communication techniques such as gestures and visuals (Education Queensland, 2017). Alex spent a period of time in the ‘silent phase’, where he would join in activities
but not speak; language learning would occur through listening and the careful watching of what others were doing (Education Queensland, 2017).

Similar to his ‘Listening’ results, Alex was rated at a level 1 for the ‘Speaking’ domain, indicating that only isolated words in Standard Australian English (SAE) would be used (Education Queensland, 2017). The words that were uttered expressed his immediate needs, and he would use gestures to support this. A lot of reliance was placed on the teacher recognising that English is not his first language, and thus filling in the gaps, making connections, and using prediction when these isolated words were uttered (Education Queensland, 2017).

5.9.3 ASHLEIGH

Data outlined in Table 55 indicates that within the ‘Listening’ domain, Ashleigh possesses the ability to understand some classroom talk. Although face to face contact is the preferred and most effective method for Ashleigh, she is still able to comprehend and respond to routine questions and enquiries, and select key words and/or phrases within another’s speech if there is minimal to no background noise and at a reduced pace. Despite this, one-on-one assistance is still necessary for task clarification, and process or wait time is still required (Education Queensland, 2017).

In the ‘Speaking’ domain Ashleigh received a rating of 2, indicating that she attempts to make short, routine and rehearsed Standard Australian English (SAE) utterances by herself. Support was still required from listeners when attempting to verbally communicate, and she relied on other non-verbal techniques to assist in her expressive language (Education Queensland, 2017).

Post-intervention, Ashleigh was assessed by Mrs X as remaining at a level 3 for ‘listening’. However, there was improvement in her speaking skills as she has
increased from a level 2 to a level 3. At this level, Ashleigh is evidenced as beginning to use Standard Australian English (SAE) and use it to participate in some classroom ‘talk’. Examples include joining in routine exchanges, initiating and participating in discussion on topics that she is familiar, providing short responses to teacher questions, and constructing her own language that moves beyond two to three word utterances (Education Queensland, 2017). Although improvement is noted, Ashleigh still requires “long wait time before responding in SAE,” and will also rely on the context and listener for support when speaking (Education Queensland, 2017, p.5).

5.9.4 MARCUS

For his proficiency in the ‘Listening’ macro skill, Marcus was assessed and rated at level 2 prior to the intervention that demonstrated he was beginning to comprehend and understand familiar talk in Standard Australian English (SAE) (Education Queensland, 2017). Although Marcus demonstrated the ability to respond to high frequency phrases such as directions and greetings, he still required and relied on face-to-face contact and non-verbals, as well as the rephrasing and repeating of directions or instructions (Education Queensland, 2017).

Prior to the intervention, Marcus exhibited speaking behaviours that positioned him at a level 2 for ‘Speaking’ outlined within the Education Queensland’s (2017) EAL/D Bandscales. At this level, he was beginning to use familiar Standard Australian English (SAE), including routine and rehearsed social language. Verbal utterances would still require support from the listener and the environment, and would be two to three words in length (Education Queensland, 2017). While Marcus may use some SAE, he had the tendency to resort back to and use his native language to converse. Although confidence and risk-taking was slowly growing, he continued to rely on the
speaker for assistance when communicating by them providing gesture, context, and/or visual cues for support (Education Queensland, 2017).

Post-intervention, Mrs X rated Marcus as remaining at a level 2 for his ‘speaking’ and ‘listening’ macro skills. However, it was noted for his speaking that Marcus had improved and was adhering to some descriptors of a level 3 Bandscale. In saying this, Mrs X stated that she is conservative when assessing students according to the EAL/D Bandscales (Education Queensland, 2017) in that she needs to evidence the student(s) demonstrating all descriptors regularly enough to warrant movement to the next level. In Marcus’ case, Mrs X commented that he is not a ‘solid’ level 2. He is at the higher end of level 2 and the low end of level 3, thereby, indicating some level of improvement post-intervention. Marcus is seen to not only begin to use Standard Australian English (SAE), but beginning to participate in it as well, thus being classroom talk, routine exchanges, and slowly moving beyond two and three word utterances (Education Queensland, 2017).

5.9.5 MEGAN
At level 2 for ‘Listening’, Megan was beginning to understand and comprehend familiar Standard Australian English (SAE). She would be able to comprehend and respond to “high frequency greetings, courtesy phrases and simple directions” (Education Queensland, 2017, p. 4). Furthermore, simple directions and instructions were physically responded to with additional support of gestures and repetitions, as well as face-to-face contact (Education Queensland, 2017). As a result of her native language, certain sounds and combinations were not perceived, in which process/wait time was necessary (Education Queensland, 2017).
Similarly to her ‘Listening’ result, Megan is at a level of speaking where she is beginning to us familiar SAE through short utterances. Routine social SAE is frequently used, and verbally communicates in English to influence certain situations (Education Queensland, 2017). At this level, support is still required, and there is substantive reliance on gestures, pictures, and context to assist in verbal communication (Education Queensland, 2017). Although she may repeat questions or statements, her confidence is developing where she can start to take risks using SAE within the school environment (Education Queensland, 2017).

5.9.6 MICHAEL

At level 3 within both domains of ‘Listening’ and ‘Speaking’, Michael demonstrated the ability to understand and participate in some classroom talk (Education Queensland, 2017). At this level, routine enquiries were comprehended with minimal difficulty, responding with yes/no answers. When listening, Michael demonstrated the ability to identify key words/phrases on familiar topics, as well as follow short instructions that are familiar classroom procedures (Education Queensland, 2017). Despite this, reliance was still on the teacher recognising that English was not his first language, and thus finds it challenging when even simple verbal interactions in Standard Australian English (SAE) are carried out at native English speaker speed. Consequently, process/wait time and one-on-one assistance from the teacher was still necessary (Education Queensland, 2017).

Although Michael was observed as participating, with minimal difficulty, in routine exchanges and initiating face-to-face verbal interaction on familiar topics, he still relied heavily on context and contextual support from the listener (Education Queensland, 2017). His own verbal language in SAE was seen to comprise of more than two-three word utterances, and was able to demonstrate such language when
responding to teacher questions in relation to the classroom learning/activities (Education Queensland, 2017). Although language was becoming more complex, this student needed and/or preferred a long wait before providing a verbal response in English.

Post-intervention, Mrs X rated Michael at the same levels for speaking and listening. It was noted that Michael had made improvements to these skills and demonstrating behaviours across both levels 3 and 4; however, not significant enough to warrant complete progression to a level 4 on the EAL/D bandscales (Education Queensland, 2017).

5.9.5 EAL/D BANDSCALE DEDUCTIONS

From the data, it can be seen that four of the six students displayed an increase in both their listening and speaking proficiency in the English language. Within the ‘listening’ domain, it can be seen that students’ ratings prior to the intervention significantly varied, ranging between levels one (1) and four (4), indicating a large contrast in ability across the student participants. Post-intervention, it can be seen that all students are ‘listening’ at either level three (Ashleigh, Alex, and Marcus) or level four (Michael, Abraham, and Megan).

According to the level three rating of the EAL/D Bandscales (Education Queensland, 2017), students understand some classroom talk. Whilst still preferring face-to-face contact and requiring process/wait time to understand and comprehend what is heard, they are able to identify “some key words and phrases from teacher talk on familiar topics” with contextual support, as well as “follow[ing] a short sequence of instructions related to familiar classroom procedures” (Education Queensland, 2017, p. 4). Although students may still require a range of assistance with their
comprehension of verbal interactions and conversations, they have moved beyond the reliance of non-verbal communication techniques of body language and gestures that were required in levels one and two to support the verbal content being delivered and assist student understanding and meaning making.

At ‘listening’ level four, the EAL/D Bandscales (Education Queensland, 2017) explain that students are “undertak[ing] some learning through SAE [Standard Australian English]” (p. 4). Here, students demonstrate their ability to easily comprehend “social SAE in familiar contexts … with only occasional help given by the speaker” (Education Queensland, 2017, p. 4). Students are able to follow verbal instructions when presented in a clear and structured manner despite precise details being missed and requiring repetition (Education Queensland, 2017). Whilst this level demonstrates further ‘listening’ proficiency by students with EAL/D, they will still require process/wait time and scaffolding of learning despite the appearance of surface fluency and non-verbal cues indicating comprehension (nodding and smiling) (Education Queensland, 2017).

From the analysis of the collected data, both Alex and Megan made the most improvement in their ‘listening’ skills according to the assessment by the staff participant according to the EAL/D Bandscales (Education Queensland, 2017). These two students increased their rating within the ‘listening’ domain by two, with Alex moving from a level 1 to 3, and Megan from level 2 to 4. Although no control group was implemented, the increased listening ratings reflect the potential of the music intervention as both Alex and Megan do not speak English within their home environment but their native languages, thus being Arabic and Russian respectively. This potential can also be extended to the improved results achieved by Marcus and Michael, as they may speak English with their siblings infrequently, but communicate.
primarily in their native language when conversing with their parents. This indicates that the majority of their exposure to and engagement with the English language is limited to the context of the school, and that the intervention assisted in the acceleration of their oracy development, in particular the skills of verbal fluency, prosody, and pronunciation.

5.10 CHAPTER SUMMARY

Chapter Five has presented both qualitative and quantitative data collected for each participant in regards to their oracy development, specifically verbal fluency, prosody, and pronunciation, pre- and post-participation in the music intervention. Aligning with the single-subject experimental design (SSED) methodology, data for each of the three areas of oracy (verbal fluency, prosody, and pronunciation) were presented separately for each participant.

The triangulation of data indicated that all students displayed improvements to varying degrees, in prosody and pronunciation after their participation in the eight-week music intervention. No significant results were, however, evident for the development of students' verbal fluency. Improvements in verbal output and sentence complexity were noted as they reinforce Crystal's (1987) ‘bucket theory’ of trade-offs between skill development. It must be noted that in a few instances for the analysis of students’ level of prosody and pronunciation, the SOLOM and/or EAL/D Rating Scales documents used to analyse student speech samples did not reflect the extent of students’ development as effectively as a result of only one speech sample of pre- and post-intervention being provided to the independent raters. When these documents were triangulated with statements from Mrs X, however, they reinforced the improvements all students achieved as she teaches and interacts with the participants.
every day and can thus more subjectively observe the changes in their level of oracy; their prosody and pronunciation.

Results from the EAL/D Bandscales (Education Queensland, 2017) further support the positive development of students’ overall speaking and listening skills in accordance to this document. Only two students (Ashleigh and Abraham) remained at the same level for their ‘listening’ from pre- to post-intervention. However, all students evidenced an increase from pre- to post-intervention in their ‘speaking’ skills on the EAL/D Bandscales (Education Queensland, 2017).

Based upon the data collected, there is no evidence to suggest that the age of the students affected their improvements. Marcus was one of the eldest participants, aged seven years eleven months at the beginning of the intervention, and demonstrated some of the highest average score increases across the three areas of verbal fluency, prosody, and pronunciation. However, his post-intervention scores were similar to or lower than Megan’s who is one year younger. Another example of this is between Abraham (seven years six months) and Michael (six years six months). Both received similar average scores on the SOLOM in the development of verbal fluency; however, Michael’s prosody and pronunciation were rated higher, further suggesting that there is no pattern in regards to the influence of student age evident among this data.

The data presented indicates that while all students made improvements, there is no discernible connection or pattern in regards to the length of time students had been living in Australia before they participated in the intervention and their post-intervention results. This is most evident when reviewing Marcus, who had only recently arrived to Australia, having been here a few weeks before participating in the
intervention, and received similar or higher post-intervention results than those who had been in the country, and thus exposed to the English language, for at least six months. It must be noted that Marcus did not receive the highest average scores in any of the three areas. However, it can be suggested that given Marcus’ severely limited English skills, the music intervention assisted in the development of the basic and foundational speaking skills necessary for verbal communication in the English language. However, participants’ time living in Australia was accurately reflected in pre-intervention data, as Marcus received the lowest scores out of all student participants, and Abraham received the highest, thus reflecting the 11 months that he had been in the country.

It is plausible that students’ native language, whether tonal or atonal, had some influence in the results upon conclusion of the intervention. Only one participant (Michael) had a native language (Bengali) that was pitch accented – meaning that variations in intonation and inflection of certain words can affect meaning. As this is a prosodic characteristic of speech, his pre-intervention score of 2.48 for level of prosody when speaking in English was similar to the majority of other participants who all had atonal languages. However, his post-intervention average score was a 4.13, thus being a positive increase of 1.65 and the most out of all five other participants, and the highest average score provided in this area across all participants. This does suggest that a music intervention that focuses on pitch and rhythmic elements may be better received by those students who have a native language that is pitch accented or tonal, as they are already aware of the need to identify subtle changes in pitch and rhythm and produce them in order to verbally communicate.

Although no patterns could be identified in regards to student age, and students’ duration in the country and their post-intervention results, it can be deduced that the
musical approach does resonate more effectively with those who have a pitch accented or tonal native language as a result of their need to already be aware of the subtle changes in pitch and rhythm for meaning. The data presented in this chapter has highlighted that whilst the intervention did not ascertain significant results for the development of students’ verbal fluency, it did have positive effects, to varying levels, on all students’ level of prosody and pronunciation.
DISCUSSION, RECOMMENDATIONS AND CONCLUSION

6.1 INTRODUCTION

Chapter Six synthesises the research findings and relevant literature to address the focus of this research, which was to investigate the potential of a music intervention, based upon the principles of audiation, to develop the specific oracy skills of verbal fluency, prosody and pronunciation in young children for whom English is an additional language or dialect (EAL/D).

The research focus was broken into two research questions:

1. What is the effect of a music intervention on the musicality of students with English as an additional language or dialect (EAL/D)? and
2. What is the effect of a music intervention on the verbal fluency, prosody and pronunciation of students with English as an additional language or dialect (EAL/D)?

6.2 SUMMARY OF SALIENT POINTS

To address the main research focus, the interpretation of results has been discussed as per each research question. Chapter One outlined the prominence and importance of music and spoken language throughout our daily lives, as well as the universality of the English language (Crystal, 2003; Dinham, 2011). Evidence suggests strong...
correlations between music and speech (Moreno, 2009; Stevens et al., 2013). There is prominence and demand for proficiency in spoken English (Nunan, 2001). Music’s prevalence in our daily lives and past research suggesting neurological and cognitive connections has consequently paved the way for this study, whereby the development of oracy in the English language for students with EAL/D is investigated through the implementation of a music intervention.

The literature explored and discussed in Chapter Two indicated that the English language is on its way to achieving global status (Graddol, 2006; 2010; Guillen & Bermejo, 2011), and the need to be able to speak the English language fluently and with an appropriate accent and pronunciation is important for a variety of academic, social, and occupational contexts. Education at all levels (primary, secondary and tertiary) is recognised as a fundamental universal right for all human beings (UNESCO, 1948), and emphasises the need to provide sufficient support for students to develop their proficiency in the English language, especially in Australia for those students for whom English is an additional language or dialect.

Statistics illustrated the continued increase in Australia’s immigration rates, in which a significant number of immigrants are arriving from non-English speaking backgrounds (ABS, 2013; Australian Government Department of Immigration and Border Protection, 2012; MPI, 2015; United Nations, Department of Economic and Social Affairs, Population Division, 2013). Consequently, there is the need for education and educational programs to appropriately assist in the development of the English language for students with EAL/D and support their English language learning endeavours.
Educational policies stipulate the need to develop and provide programs that appropriately address the specific and diverse learning needs of the student(s) so as to enable them to achieve a level of English proficiency that can be drawn upon and effectively applied in a variety of contexts (McCormack & Klopper, 2016). Analysis and review of Australian education documents (ACARA, 2012, 2014, 2014a, 2014b, 2015a) suggested that whilst steps have been considered and taken to support students learning English as an additional language or dialect as a part of the Australian Curriculum (ACARA, 2012), these documents can be considered as lacking detail. Whilst it is recognised that students with EAL/D need appropriate support to develop their level of oracy, specific teaching and learning practices are not stipulated, and those that are do not move beyond traditional approaches of providing students with additional practise or rehearsal time, and/or working with a peer or in small groups to assist in the development of oracy, which has the potential to further discourage students with EAL/D from speaking in front their peers due to lack of competency in English. Therefore, the creation, implementation, and investigation of potential teaching and learning practices for students with EAL/D are required in order to provide teachers with a variety of approaches to develop students’ level of oracy.

Whilst research has been conducted into the use of music for ‘learning’ and the development of skills such as intelligence (IQ) (Schellenberg, 2004, 2006), mathematics (Costa-Giomi, 2004; Graziano et al., 1999), and reading, few have investigated the development of oracy using a music intervention based on the principles of audiation from Gordon’s Music Learning Theory. While neuroscientists have identified connections between music and speech within the brain, these studies have been conducted in a single, scientific experiment, not over a prolonged period of time in an educational setting. Whilst my study was only an eight-week intervention
and not considered longitudinal, it was sustained over a longer period of time than other studies investigating music’s potential in terms of data collection and analysis in relation to students’ oracy (verbal fluency, prosody, and pronunciation).

All languages possess the dimensions of pitch and rhythm, which are integral to music (Deutsch, 1992; Schellenberg, 2009). This gave rise to the selection and implementation of the music intervention used in this research which focused on specifically developing the tonal and rhythmic capacity of students with EAL/D, with the ultimate aim of improving students’ verbal fluency, prosody, and pronunciation (oracy). Whilst a number of approaches to the teaching of music were considered, Gordon’s Music Learning Theory (GIML, 2017a) was deemed appropriate and used as the foundation of the intervention as a result of its tonal and rhythmic focus, and the goal of audiation. Although music and song have been used to investigate the development of other cognitive domains (Aleman et al., 2000; Costa-Giomi, 2004; Rauscher et al., 1997; Brochard et al., 2004; Franklin et al., 2008; Schellenberg, 2006), none was found to have used Gordon’s Music Learning Theory for linguistic purposes whereby tonal and rhythmic patterns were focused upon to support the development of oracy for students with English as an additional language or dialect.

Analysis of quantitative and qualitative data revealed that the music intervention did improve the oracy skills of prosody and pronunciation to varying degrees, as well as musicality for students with English as an additional language or dialect. However, no significant results were obtained in regards to the development of students’ verbal fluency (mazing behaviour). Further, two additional themes emerged from the qualitative data. These were:
(a) increased confidence, motivation, and engagement in student participants who have English as an additional language or dialect; and

(b) the facilitation of relationships between student participants and their peers, the IEC staff member (Mrs X), and the researcher.

These findings led to further distillation of the data in relation to the main research focus and the two associated research questions.

6.3 INTERPRETATION OF RESULTS

6.3.1 MAIN RESEARCH FOCUS

The main focus for this research was to investigate the influence of a music intervention on the development of oracy for students with English as an additional language or dialect. It was noted over the duration of the eight-week intervention that all student participants demonstrated an improvement in their level of oracy to varying degrees. In particular, all students demonstrated improvements in tonal variation and clarity of pronunciation, aligning with the ‘physical’ component of oracy and its sub-strand of ‘voice’ as outlined by the University of Cambridge (2014c). Data obtained from this research suggests that music, and in particular song, assisted in the development of students’ oracy.

Garcia-Conesa and Juan-Rubio (2015) state “rhymes and songs make up the first experienced parts of communication in the children’s mother tongue” (p. 86). The use of song in this intervention reflected the natural approach a child under goes when initially learning a language, and was thus effective in assisting the development of students’ the level of oracy. The use of music in a language learning classroom is supported by Medina (1990) as she believes that music can help students succeed in
learning a foreign language. Despite the somewhat short intervention period, the data collected and analysed reflected the success song had on the level of oracy for all student participants for whom English is as an additional language or dialect.

The improvement of student results throughout the intervention suggest that the development of the particular components of oracy (prosody and pronunciation) were, as Murphey (1992) puts it, ‘stuck in their head’ and more easily recalled as a result of learning through song. Consequently, learning through song not only livened up the learning environment for student participants in this research (Campbell & Campbell, 1996), but provided them with an approach whereby they were better able to remember portions of language (Murphey, 1992). This connects to Gordon’s (2005) principles of audiation within his Music Learning Theory, where one has the ability to hear sounds in his or her head when they may not be physically present. The students’ improvement in their level of oracy and musicality after their participation in the intervention suggests that the methodological approach taken for this research study that focused on developing tonal and rhythmic patterns through song assisted in developing students’ level of oracy, as they were better able to remember the songs learned, the tonal and rhythmic patterns practised and developed throughout each song, and then apply it to their spoken English.

The data showed that the majority of students’ oracy skills in relation to the components of prosody and pronunciation improved throughout their participation in the music intervention. However, it can be suggested that the use of song as a pedagogical tool not only developed the level of oracy in students with English as an additional language or dialect, but enhanced other elements that contributed to the development of their oracy, that being their confidence, motivation, and engagement.
As Ara (2009, p. 169) explains, music is “a source of motivation, interest and enjoyment,” with the potential to enable students to concentrate on learning the English language as it is less tedious and effectively retains their attention. The use of music being a motivational approach to language learning was reflected in this research as both the researcher and Mrs X noted all students demonstrated an increase in these areas to varying degrees, particularly within the final four weeks. This was evident in their singing and speech, as dynamic level increased and made them easier to hear and understand, as well as willingness to sing and talk independently without relying on their peer, their teacher, and/or the researcher as a security blanket. Additionally, positive behaviour management techniques required implementation throughout the latter lessons due to students becoming overenthusiastic by interrupting the researcher and/or peer when talking or singing by sharing their willingness to sing independently. This is supported by Gan and Chong (1998) as they explain that the repetitive and rhythmic nature of songs, rhymes and simple chants serve to motivate students, in which the musical approach provides a linguistic context that is effective in building students’ level of confidence, which was evident in this research.

Ara (2009) stresses that one prevention to a child’s language learning process is feeling “uncomfortable or under pressure in the language class” (p. 169), whilst Larsen-Freeman (2000) adds that anxiety can impede the language learning process. This was observed during the initial phase of the intervention whereby the majority of student participants evidenced introverted behaviours and unwillingness to participate or speak/sing loudly and by themselves. This increase in confidence, motivation and engagement were also observed by Mrs X through her daily interaction with all student participants.
Shen (2009) explains that a number of students consider listening to songs and learning a language through song entertainment. However, unbeknownst to them they were implicitly and unconsciously learning particular oracy skills, proving song to be “a pleasant and effective way to promote language awareness [to student participants] than mechanically memorising tedious course-books of vocabulary and grammar” (p. 91). Consequently, the use of song in this research proved effective by motivating students and fostering their enjoyment in language learning, so that they were able to indirectly learn and develop particular oracy skills.

Music and songs are tools that have the potential to provide a comfortable environment that “offer a change from the routine procedures in the classroom” (Lo & Li, 1998, p. 1; Saricoban & Metin, 2000) whereby children can enjoy learning without the pressure generally associated with language learning (Ara, 2009). The use of music and song as the pedagogical tool for English language learning in this study created a safe and supportive environment whereby all student participants gradually became more confident to speak and experiment with the English language. This was reflected throughout the intervention as participants gradually became more engaged in their learning and willing to participate that afforded the researcher to use positive behaviour management techniques to ensure the lesson progressed and students remained focused. Fonseca-Mora et al. (2011) state that children, in general, “love music, singing and imitating,” in which the intervention provided an approach to language learning that was fun and engaging, thus reducing student anxiety frequently caused “by an inability to speak the target language correctly” (p. 101). The use of song assisted the increase of students’ motivation and engagement, which in turn aided in the development of their oracy in the English language.
Through researcher observation, an increase in levels of motivation and engagement was noted throughout the lessons as students gradually became more animated with their singing and speech. Slevc and Miyake (2006) explain that the structural and motivational properties associated with the music in song(s) benefit language acquisition. Student gains in confidence, motivation, and engagement positively translated to their learning of the English language, as their level of anxiety surrounding spoken English was reduced making them more receptive to the teaching and learning that was occurring in a non-traditional, engaging manner using a tool that is present throughout their everyday lives. This connects to what Krashen (1982; 1985) identifies as the Affective Filter Hypothesis, whereby optimal learning occurred due to students’ “positive attitude towards learning is present” (Schoepp, 2001., p. 1). Shen (2009) also reports the affective benefits of using English songs in EAL/D classrooms, as a harmonious classroom environment is created, students’ anxiety levels are reduced and their interests are fostered, and students are motivated to learn the English language.

Through observation, the students’ increased levels of confidence in their spoken English proficiency also contributed to the development and facilitation of relationships, which continued to promote student oracy through interaction. Throughout their participation in the intervention, the researcher observed that students were able to build a relationship with them and develop and consolidate prior relationships with other student participants. Additionally, Mrs X observed the development of relationships between all participants and their peers in the IEC and mainstream classrooms, and the staff participant themselves. This was evident post-intervention as they were initiating conversation with the researcher and Mrs X, as well
as with peers within their Intensive English Centre class and the native English speaking children in their mainstream class.

From students’ participation in the intervention, it can be suggested that it supported the increase in students’ oracy in spoken English to varying levels of proficiency. Neuroscientific studies have continued investigating specific connections between the two domains of music and speech, where they discovered several similar functions and neural modules that cause interhemispheric activation (Maess & Koelsch, 2001; Tallal & Gaab, 2006), proposing there are parallels in that the processing of both musical and linguistic syntax occur in the same regions. Additionally, Moreno et al. (2009) state “musical expertise … or musical training … can improve behavioural performance and modify brain substrates, not only in the musical domain but also in other domains” (p. 329). Results from this research support Moreno et al. (2009) and further demonstrate the connection between music and speech when examining the development of both areas (music and speech) in relation to each other. Prior to their participation in the intervention, there was no evidence to suggest a connection between students’ English speaking ability and their level of musicality existed. Although this research did not employ any neuroscience methods for data collection and analysis, it has provided supplementary and more qualitative data through the Primary Measures of Music Audiation (PMMA) to support the existence of this connection and transfer effects between music and speech that can be a potential focus of research for neuroscientists. This post-intervention data indicates all students increased their level of musicality and were now within the High percentile range for both tone and rhythm, which was reflected in students’ level of oracy, more specifically their prosody, and pronunciation, suggesting and supporting the notion of transfer effects from the music domain to the language.
This reinforces how the focus on tonal and rhythmic patterns in this study’s intervention assisted in the development of another domain, that being students’ oracy in the English language. Furthermore, Schellenberg (2009, p. 137) explains strong correspondence exists “between the tonal melody of spoken words and the musical melody of those words in song” in regards to specific cultures’ native language and music. The musical approach and use of Western songs to develop the students’ level of oracy in English was effective as the tonal and rhythmic patterns explored and practised throughout the intervention are reflected in the spoken English language. This was particularly evident in the results of one participant (Michael) who has a native language that is pitch-accented, whereby particular words uttered at different pitches alter the meaning of the word. Although his oracy skills (verbal fluency, prosody and pronunciation) in English were limited prior to his participation in the intervention, his level of musicality was high; reflecting his need to be aware of prosodic characteristics (pitch and stress) in his native language. Through a musical approach to language learning, not only did his musicality increase post-intervention, but so too did his level of oracy, particularly his level of prosody, thus reinforcing the connection between spoken and musical melody and transfer effects that can occur between them, and the effectiveness of a musical approach to language learning. The results substantiate improvements by all students are in line with those of Moreno and Besson (2006) who also conducted an eight-week music intervention whereby the pitch detection skills for strong incongruities increased only in the participants who were a part of the music intervention group. This reinforces how despite a relatively short intervention period for participants, transfer effects from music to language can be evident and do occur. In summary, the results indicate a positive development of
student’s musicality and level of oracy, to varying levels, following their participation in the music intervention.

6.3.2 RESEARCH QUESTION 1

Research question one investigated the influence of the music intervention on the musicality for students with English as an additional language or dialect. The intervention employing principles of audiation from Gordon’s Music Learning Theory (GIML, 2017a) influenced all students’ musicality in both pitch and rhythm, as demonstrated in their pre- and post-intervention scores. Throughout the intervention, students were able to explore, experience, and interact with the musical dimensions of pitch and rhythm that resulted in them all being able to more effectively audiate at the conclusion of the intervention, resembling the ability to think in a language where sounds are given meaning (GIML, 2017b). The sequencing of intervention lessons involved both discriminatory and inferential learning (GIML, 2017c) that enabled students to first build their tonal and rhythmic vocabularies before possessing the ability to explore and experiment with them, and demonstrate their improvement through the Primary Measures of Music Audiation (PMMA) computer generated test.

The data revealed that regardless of previous musical experience for some students, the intervention remained effective in increasing the musicality of all students. Megan participated in private guitar lessons outside of regular school music lessons, and this reflected her pre-intervention PMMA scores. It can be intimated that Megan’s private guitar lessons prior to her participation in the intervention would have exposed her to several tonal and rhythmic patterns due to the repertoire she was learning. Megan’s participation in the intervention continued to build on her prior musical experiences by developing certain tonal and rhythmic patterns. Another student, Michael, whose native language is pitch-accented (e.g.: pitch changes for
certain words alter their meaning) achieved high pre-intervention PMMA scores, ranking him in the 88th (tonal) and 80th (rhythm) percentiles. It is deduced that his pre-intervention PMMA results were high due to his capacity to recognise the subtle pitch changes in his native language. This finding is supported by Samuelsson (2011) who proposes that the ‘sing-song’ nature and quality of tonal languages further reinforces the interconnectedness of speech and music. Pfordresher and Brown (2009) also suggest that those with a first or native language that is tonal demonstrate “pitch-processing advantages in non-linguistic domains,” such as music (p. 1386). This would suggest that the use of music may be beneficial for students who have a native language that is pitch-accented or tonal as a result of neural integration between music and speech (Brown, 2001). It is the fine-tuning and use of pitch to communicate in tonal languages that assists in the use of pitch in other non-linguistic contexts, this being music.

Findings show that all students’ level of musicality increased as a result of their engagement with and participation in the music intervention, with maintenance effects evident for five out of the six participants. This improvement was regardless of their native language being tonal or atonal, and the level of music exposure and experience outside of the music lessons provided to all students at the case site.

6.3.3 RESEARCH QUESTION 2

Verbal Fluency

The second research question investigated the influence of a music intervention on the verbal fluency, prosody, and pronunciation for students with English as an additional language or dialect. The findings for this research question were predominantly presented in Chapter Five and evidence suggested a positive impact
of the intervention on all students’ levels of prosody and pronunciation when speaking English to varying degrees of proficiency given individual learning rates. However, there was no evidence to support a significant improvement in verbal fluency following the eight-week intervention. The intervention targeted verbal fluency through the focus on rhythmic patterns, and measured it through the analysis of multiple spontaneous speech samples and triangulated with qualitative data. However, it is unknown why there was a lack of significant improvement in student results. For Abraham, it is suggested that the lack of significant improvement in his verbal fluency after his participation in the music intervention could potentially be due to the length of time that he had been living in Australia prior to his participation in the intervention (11 months), during which he had been exposed to the English language over this time. It is possible that the other five student participants required a longer period of time participating in the intervention for significant results to emerge in regards to improvements in their verbal fluency.

Schoepp (2001) affirms that songs enable the development of automaticity, thus being able to produce language rapidly without pauses (Gatbonton & Segalowitz, 1998), in which Ashtiani and Zafarghandi (2015) and Guglielmino (1986) elaborate by outlining that the use of music provides such repetitions in a pleasant and enjoyable manner. However, significant improvements to students’ verbal fluency when speaking English were not evident in this research. Results from SALT-NZAU (Miller et al., 2016) and the Student Oral Language Observation Matrix (California State Department of Education, 1981) indicated that although some students made slight improvements to their verbal fluency in spoken English after their participation in the eight-week music intervention, indicated by their decreased mazing behaviour, these changes were not significant. Verbal fluency is the flow of one’s verbal utterances and
was determined by students’ mazing behaviour (filled pauses and repetitions). Given the lack of significant increase in all students’ verbal fluency post-intervention, it can be suggested that this eight-week music intervention was not long enough to influence students’ verbal fluency. Due to the alternating focus of tone and rhythm each week of the intervention, students only received four weeks of rhythm-specific lessons. Although Schoepp (2011) reports the consistent and repetitive nature of songs, the alternating focus each week and only four weeks being rhythm-based could have affected rhythm development and thus its translation to the development of verbal fluency. It can, therefore, be suggested that research be conducted over a longer period of time to investigate if this music intervention can influence the development of students’ verbal fluency.

Statements from Mrs X revealed that all students improved in their verbal fluency, some rather significantly. In Mrs X’s opinion, these contradicted the results provided by SALT-NZAU and the SOLOM when triangulated. The Hawthorne Effect could be a potential explanation as to why Mrs X perceived improvements in students’ verbal fluency when the data from SOLOM and SALT-NZAU did not. This suggests that students may have realised they were being assessed (McCambridge, Witton, & Elbourne, 2014), and demonstrated higher levels of verbal fluency during their frequent interactions with Mrs X instead of the single weekly measure collected by the researcher.

Upon analysis, it was discovered that what Mrs X identified as improvements to verbal fluency was, in several instances, referring to students’ verbal productivity and/or sentence complexity. The findings of increased verbal productivity and sentence complexity were both reflected in the results provided by SALT-NZAU and the SOLOM (California State Department of Education, 1981).
Despite the lack of change in verbal fluency as a result of students’ participation in the music intervention, the findings indicated improvements in verbal productivity and sentence complexity. Song selection was from Taggart et al. (2000) and in line with the teaching of audiation. It could be suggested that whilst they developed and repeated rhythmic patterns, it did not translate to verbal fluency. However, some students’ verbal productivity (two students) and sentence complexity (three students) for both post-intervention and follow-up phase. It can be suggested that this is not due to a limited capacity working memory, but the fact that this music intervention gave students’ learning a push and more effectively accelerated other areas besides their verbal fluency. The lack of improvement to students’ verbal fluency could also be reflective of their attempts to use more cognitive resources to formulate more complex sentences. This would, therefore, account for the increase in mazing behaviour post-intervention and during the follow-up phase for some students.

It is only more recently that music and its influence on verbal productivity has been investigated, but not in the realm of students with EAL/D. Wan et al. (2011) discovered positive verbal production for students who were diagnosed as autistic through music. Although Wan et al.’s (2001) study did not involve participants for whom English was an additional language or dialect, their study supports the results of this research which indicate the potential of music to increase the verbal productivity and sentence complexity of students with EAL/D.

Although the element of verbal fluency required for oracy was not developed through this particular intervention, positive results were obtained in regards to the increase in students’ prosody.
Prosody

All students demonstrated an increase in prosody ratings (characteristics of speech – stress and intonation) as a result of the intervention. Garcia-Conesa and Juan-Rubio (2015) outline, “language and music are known to have similar communicative modes” (p. 84), using pitch, rhythm, stress, melodic contours and intonation changes to effectively convey the intended meaning. Arleo (2000 cited in Ashtiani & Zafarghandi, 2015) further highlights this connection by stating that,

music and oral language production are of the same phenomena and thus possess some common features that can be used in second language teaching methods: the rhythm and melody of the music could be considered tantamount to stress and intonation. (pp. 212-213).

Songs mix linguistic and musical information, and contain the same elements found within oral stories, yet conveyed by a musical vehicle (Fonseca-Mora, et al., 2011). The use of song as the pedagogical tool for the intervention in this study was effective to assist in the development of prosody. The songs used throughout the intervention enabled students to practise and develop specific tonal and rhythmic vocabularies, in which certain intonation and stress patterns reflected those within English speech. The positive results obtained from this research in regards to the development of all students’ level of prosody is supported by Phillips (1993) who states that songs assist in practising “the sounds, rhythms and stress patterns of English” (p. 108). The prosodic characteristics of speech are the rhythm, stress, and melodic contours or intonation changes that underpin human utterances. Saricoban and Metin (2000) elaborate on this by stating that the “prosodic features of the language such as stress, rhythm [and] intonation are presented through song” (para. 3). The alternating
focus on tone and rhythm throughout each week of the intervention in this study proved effective as it translated to the level of prosody in their spoken English. Although students received four weeks of each focus (tone and rhythm), which did not prove effective for increasing students’ verbal fluency, it yielded positive results for the development of students’ level of prosody. Students were able to focus on intonation that was easier to follow and learn through song rather than the more traditional approaches to language learning (García-Conesa & Juan-Rubio, 2015). Therefore, this intervention was effective in improving all students’ level of prosody over a short period of time.

After participating in the eight-week music intervention, all students demonstrated improvements to varying degrees in their level of prosody when speaking English, supporting the notion that even after a short period of time, the melodic contours and stress found in all songs can have positive transfer effects to the linguistic domain. Whilst all students demonstrated improvements to their level of prosody, the intervention was demonstrated as having a greater effect on Michael, the student participant whose native language falls within the tonal category due to it being pitch-accented. Language comes to exist through the combination of sets of sounds, with each culture selecting its own distinct set of sounds (Vonderhoff, 2009), and the use of sounds defining each language as tonal or atonal. Tonal languages make use of melodic contour, in which Han et al. (2011) outline that there is alignment between the tonal characteristics of a culture’s music and spoken language. It can be implied that Michael’s scores reflect the nature of tonal languages and that there are transfer effects between spoken language and music. This particular approach of using music and song to learn the English language resonated more with Michael than other
student participants based on the characteristics of his native language – the need to be aware of pitch and rhythm for effective verbal communication.

This study drew upon principles of audiation from Gordon’s Music Learning Theory (GIML, 2017b). Through the post-intervention and follow-up PMMA results, it can be suggested that students’ musicality was developed through the learning and building their tonal and rhythmic vocabularies; they learned to better hear these ‘sounds’ in their heads, which were then applied to their singing and spoken English. Sharpe (2001) supports this by outlining that songs provide ample opportunities for structures and patterns in the foreign language to be gradually internalised. This also connects to work by Millington (2011), and more recently with Garcia-Conesa and Juan-Rubio (2015) who state that “songs also help to improve the listening skills because they provide students with practice listening to different forms of intonation and rhythm” (p. 90). They highlight that the natural rhythm and recurring beat evident in songs is “similar to the stress patterns of spoken English,” indicating the effectiveness of using song(s) to assist in practising rhythm and stress for English language learning (Garcia-Conesa & Juan-Rubio, 2015, p. 90). The use of song provides students with the opportunity to develop and build upon their tonal and rhythmic vocabularies in an enjoyable manner that developed their level of prosody in their spoken English.

Pronunciation

After the intervention, data confirmed that all students had improved their pronunciation levels when speaking English, to varying degrees. Whilst all students retained their native accent, their speech was more coherent when compared to their pre-intervention results. Mrs X and I both found all student participants easier to
understand. Whilst it could be argued that I improved my ability to decipher what students were saying, data collected from Mrs X and the ratings from the SOLOM and EAL/D Rating Scales by the independent assessors support students’ improved pronunciation after their participation in the music intervention. Related to elements of prosody, Lems (2001) explains that features of speech that affect pronunciation are introduced to students through song, thus being rhythm, intonation and stress. Shen (2009) agrees that songs can effectively assist in teaching natural pronunciation to students with EAL/D. Further, the repeated listening, learning, and singing of songs in this study’s intervention enabled students to “gradually correct their errors and achieve a more native-like pronunciation” (Shen, 2009, p. 92). From the data collected, it can be suggested that the use of song with a specific focus on tonal and rhythmic patterns encouraged and enabled students to “pay more deliberate attention to pronunciation, phonological rules, stress and intonation” (Shen, 2009, p. 92).

The increase in students’ level of pronunciation from this research may be related to the level of enjoyment songs can provide as they provide an alternate approach to language learning. Garcia-Conesa and Juan-Rubio’s (2015) work supports this as they found “songs allow young children to practice a new sound without producing the same level of boredom” (p. 90). This music intervention did, however, enable students to practise such sounds from the English language in an engaging manner, which resulted in increased pronunciation in their spoken English.

Murphey (1992 cited in Millington, 2011) stated, “songs can help young learners improve their listening skills and pronunciation, therefore, potentially helping them to improve their speaking skills” (p. 134). This was reflected in the data from this study as students’ listening skills were enhanced as a result of the intervention focusing on developing tonal and rhythmic patterns through auditaion, which in turn influenced the
development of students’ pronunciation in spoken English. Additionally, students, during the intervention lessons, were required to focus on tonal and rhythmic accuracy when singing the song and not just the words and meaning behind them. Consequently, this shift in focus enabled students to develop their pronunciation ability when speaking English as they were listening and practising intonation, stress, and the rhythm of words and phrases throughout the songs instead of primarily the song’s meaning (Reilly & Ward, 1997; Klancar, 2009 in Tse, 2013, p. 87). The intervention using song to assist in the development of all students’ pronunciation proved effective. However, all required further development for their pronunciation to be considered native-like.

In addition to song assisting in the development of prosody and pronunciation, it is possible that the age of participants when they engaged in the intervention may have assisted in students’ improvements. Hopp and Schmid (2013) indicate that accuracy of pronunciation in additional language acquisition is influenced by students’ age when they start learning, that being younger than 10 years old. Although students did not cease communicating in their native language within their home environment, it can be suggested based on this literature (Hopp & Schmid, 2013) that improvements to their prosody and pronunciation levels could potentially be due to them being aged between six and eight when they participated in the intervention.

Data from this study indicates that the use of music through the pedagogical tool of song increased students’ level of prosody and pronunciation when speaking English in all student participants; however, it did not assist the development of their verbal fluency. Results revealed that students’ demonstrated positive improvements to their verbal productivity and sentence complexity, as well as in their levels of confidence, motivation and engagement.
6.4 IMPLICATIONS OF RESEARCH

Data from this research warrants further investigation within the field of music education and oracy. The results confirm that employing principles from Gordon’s Music Learning Theory (GIML, 2017a) can result in the positive development of skills in a non-musical domain (oracy). There is potential for future research to build upon this current study. This can be done in several ways. Whilst the ‘physical’ component of oracy was investigated in this research, this music intervention could lend itself to explore the development of other oracy skills outlined by the University of Cambridge (2014c) including linguistic, cognitive, and social and emotional. Further, it encourages modifications to the research design, such as the inclusion of a control group, to further demonstrate the changes in oracy (verbal fluency, prosody, and pronunciation) were as a result of the music intervention. Additional measures could be employed to assist in the most effective investigation of such skills, as well as the introduction of multiple schools and larger groups of student participants from a variety of different year levels to investigate the theory regarding age of acquisition for additional language learning (Hopp & Schmid, 2013).

In addition to contributing to the field of music education, further research would have the potential to inform national curriculum development with regards to the teaching and learning practices of students with English as an additional language or dialect (EAL/D). As reviewed, the Australian Curriculum (ACARA, 2012) requires more explicit focus for teaching and learning instruction in regards to students with EAL/D to support key aspects of oracy (verbal fluency, prosody, and pronunciation) as they are continually assessed on it throughout their academic journey starting from Foundation year. This research has provided an approach that can be adopted by generalist and specialist teachers of students with EAL/D, and inform future
pedagogical approaches in order to develop students' level of oracy in regards to verbal fluency, prosody and pronunciation.

It is recognised that this research implemented tools that may not necessarily be used by generalist teachers (SALT-NZAU, SOLOM and EAL/D Rating Scales). The SOLOM and EAL/D Rating Scales are similar to a rubric as they contain specific criteria and standards within each, and generalist teachers should be familiar with the rubric process as they are required to assess students against them for particular subjects. Therefore, teachers would be able to understand and assess students’ level of verbal fluency and pronunciation according to the SOLOM and EAL/D Rating Scales. Although not an analysis tool used by generalist teachers, they are able to collect spontaneous speech samples from students and learn to use SALT-NZAU (Miller et al., 2016) in order to analyse students’ speech themselves. If not, there are speech-language pathologists (SLP) in Australia who provide their services to a number of school and/or are based at one particular school. Consequently, teachers who did not feel confident using SALT-NZAU could employ the services of a local SLP who can transcribe and code the speech samples and provide the necessary quantitative data.

Literature from the field of neuroscience has suggested the interconnectedness of music and speech, and has primarily conducted single scientific experiments but not at an individual student/participant level to support their claims. Therefore, this research provides additional evidence from an educational perspective to support the music-speech connection highlighted by neuroscientific studies. Furthermore, this research indicates potential directions for future research collaboration between the fields of education and neuroscience fields to investigate the music-speech relationship.
6.5 RECOMMENDATIONS

The results from this research show that the use of a music intervention has the potential to support the development of oracy for students with English as an additional language or dialect. Recommendations for further research include:

- a longitudinal study to investigate the potential and extent to which this music intervention can develop the oracy for students with EAL/D, and if verbal fluency is affected;
- wider recruitment of students with a tonal or atonal native language so as to investigate the effects of the music intervention on those students who have a tonal or atonal native language;
- deploy the music intervention with a variety of ages from Foundation to Year 12 (5 – 18 years) to deepen the investigation of the effects of the intervention across age groups, and examine how each group would acquire English and the changes to their accent depending on the age at which they learn this additional language;
- recruit a greater number of student participants with EAL/D to further investigate the effects of this music intervention given their individual backgrounds and experiences;
- recruit a variety of schools at a local, national, and/or international level to be involved in the research to deepen the investigation of effects of this intervention across geographical location, and sociocultural and socioeconomic context; and
The inclusion of a control group to further investigate that students’ oracy development was as a result of the music intervention and not the specialised English learning environment provided at the case site.

6.6 CONCLUSION

The development of oracy is deemed crucial for the development of literacy and underpins the skills of reading, writing, listening, and speaking (Kirkland & Patterson, 2005). One’s ability to verbally communicate extends beyond the academic environment of school: occupational and democratic purposes, civic and social participation, and life in general (Hartshome, 2011; University of Cambridge, 2014b). With English recognised as a global language (Graddol, 2006; Guillen & Bermejo, 2011) and the continued increase in Australian immigration rates, the creation and implementation of the music intervention used in the current research to develop oracy for young students who have English as an additional language or dialect seems justified.

 Sağlam and Kayaoglu (2010) state, “although verbal language appeals to a restricted community of speakers, the language of music addresses a diversity of speakers, either in the same language or in other languages” (p. 208). This reinforces the idea that music is also a universal language, evident in every culture and present throughout our everyday lives from birth onwards (Abidin, Pour-Mohammadi, Singh, Azman, & Souriyavongsa, 2011; Davanellos, 1999; Fox, 2000; Garcia-Conesa & Juan-Rubio, 2015; Patel, 2003). Due to the permeating nature of music throughout our lives, it has been argued that it be used in language learning classrooms due to a number of parallels to speech, the neurological processing similarities between music and speech, and the motivating nature of music that can propel language learning. As life
outside of the classroom contexts tends to be filled with music and song, it may be beneficial for teachers to employ methods for language learning that more closely resemble this (Medina, 1990).

This research built upon music’s potential to develop oracy, in particular verbal fluency, prosody and pronunciation, and the perceived need to develop such skills for students with EAL/D. This guided the selection and implementation of an intervention that proved successful in varying degrees for improving the level of oracy for all student participants in regards to prosody and pronunciation, but not verbal fluency. Due to the preliminary results from this study and the minimal use of music in language learning classrooms to date, it encourages the continued refinement of this intervention so as to become a pedagogical approach that classroom teachers could adopt to support the development of oracy for students with English as an additional language or dialect.
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Appendix A

Lesson plans for the intervention based upon the *Jump Right In: the Music Curriculum Teacher’s Guide* Book 1.

### PhD Data Collection Observations and Anecdotal Notes

<table>
<thead>
<tr>
<th>Student</th>
<th>Speech Dynamic</th>
<th>Singing Dynamic</th>
<th>Participation</th>
<th>Engagement</th>
<th>Eye Contact</th>
<th>Questioning</th>
<th>Pronunciation</th>
<th>Pauses in Speech</th>
<th>Repetitions in Speech</th>
<th>Fillers in Speech</th>
<th>Peer Interaction</th>
</tr>
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<tbody>
<tr>
<td>Abraham</td>
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<tr>
<td></td>
<td>Soft</td>
<td>Loud</td>
<td>Yes</td>
<td>No</td>
<td>High</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
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<td></td>
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<table>
<thead>
<tr>
<th>Term:</th>
<th>Week #:</th>
<th>Lesson #:</th>
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<tbody>
<tr>
<td>Date:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time:</td>
<td></td>
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</table>
## Appendix C

**Student Oral Language Observation Matrix (California State Department of Education, 1981)**

### SOLOM Teacher Observation - Student Oral Language Observation Matrix

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A: Comprehension</strong></td>
<td>Cannot be said to understand even simple conversation.</td>
<td>Has great difficulty following what is said. Can comprehend only social conversation spoken slowly and with frequent repetitions.</td>
<td>Understands most of what is said at slower-than-normal speed with repetitions.</td>
<td>Understands nearly everything at normal speed. Although occasional repetition may be necessary.</td>
<td>Understands everyday conversation and normal classroom discussions.</td>
</tr>
<tr>
<td><strong>B: Fluency</strong></td>
<td>Speech so halting and fragmentary as to make conversation virtually impossible.</td>
<td>Usually hesitant; often forced into silence by language limitations.</td>
<td>Speech in everyday conversation and classroom discussion frequently disrupted by the student’s search for the correct manner of expression.</td>
<td>Speech in everyday conversation and classroom discussion, generally fluent with occasional lapses while the student searches for the correct manner of expression.</td>
<td>Speech in everyday conversation and classroom discussions fluent and effortless, approximating that of a native speaker.</td>
</tr>
<tr>
<td><strong>C: Vocabulary</strong></td>
<td>Vocabulary limitations so extreme as to make conversation virtually impossible.</td>
<td>Misuse of words and very limited; comprehension quite difficult.</td>
<td>Student frequently uses wrong words; conversation somewhat limited because of inadequate vocabulary.</td>
<td>Student occasionally uses inappropriate terms and/or must rephrase ideas because of lexical inadequacies.</td>
<td>Use of vocabulary and idioms approximate that of a native speaker.</td>
</tr>
<tr>
<td><strong>D: Pronunciation</strong></td>
<td>Pronunciation problems so severe as to make speech virtually unintelligible.</td>
<td>Very hard to understand because of pronunciation problems. Must frequently repeat in order to make him/herself understood.</td>
<td>Pronunciation problems necessitate concentration on the part of the listener and occasionally lead to misunderstanding.</td>
<td>Always intelligible, although the listener is conscious of a definite accent and occasional inappropriate intonation patterns.</td>
<td>Pronunciation and intonation approximate that of a native speaker.</td>
</tr>
<tr>
<td><strong>E: Grammar</strong></td>
<td>Errors in grammar and word order so severe as to make speech virtually unintelligible.</td>
<td>Grammar and word order errors make comprehension difficult. Must often rephrase and/or restrict him/herself to basic patterns.</td>
<td>Makes frequent errors of grammar and word order that occasionally obscure meaning.</td>
<td>Occasionally makes grammatical and/or word order errors that do not obscure meaning.</td>
<td>Grammar and word order approximate that of a native speaker.</td>
</tr>
</tbody>
</table>
## Appendix D
### EAL/D Rating Scales

<table>
<thead>
<tr>
<th>Criteria</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pronunciation</td>
<td>Student speaks English with a strong native language accent</td>
<td>Student speaks English with a moderate native language accent</td>
<td>Student speaks English with no evidence of native language accent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intelligibility</td>
<td>Student speaks English with 0% intelligibility</td>
<td>Student speaks English with 50% intelligibility</td>
<td>Student speaks English with 100% intelligibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prosody</td>
<td>Intonation patterns when speaking English do not resemble English prosody</td>
<td>Intonation patterns when speaking English somewhat resemble English prosody</td>
<td>Intonation patterns when speaking English highly resemble English prosody</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E
SALT-NZAU Transcript – Marcus pre-intervention

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
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</thead>
<tbody>
<tr>
<td>C</td>
<td>Child</td>
</tr>
<tr>
<td>E</td>
<td>Examiner</td>
</tr>
<tr>
<td>EW</td>
<td>Error at word level</td>
</tr>
<tr>
<td>EU</td>
<td>Error at utterance level</td>
</tr>
<tr>
<td>X</td>
<td>Single word unintelligible</td>
</tr>
<tr>
<td>XX</td>
<td>Portion of sentence unintelligible</td>
</tr>
<tr>
<td>XXX</td>
<td>Entire sentence unintelligible</td>
</tr>
<tr>
<td>&lt;&gt;</td>
<td>Overlapping speech</td>
</tr>
<tr>
<td>0:00</td>
<td>Minutes : Seconds between utterances</td>
</tr>
<tr>
<td>*</td>
<td>Omitted word/suffix</td>
</tr>
<tr>
<td>()</td>
<td>Filled pauses; repetition of words/phrases</td>
</tr>
</tbody>
</table>

$ Child, Examiner
+ Language: English
+ Participant Id: MF
+ Gender: M
+ Grade: 2
+ Context: Con
+ Collect: 1
+ Examiner: BM
+ Transcriber: BM
- 0:00
E So, I'm going to ask you just a simple question OK?
E And you can say as much as you want.
E The question I'm going to ask you is what did you do yesterday?
; 0:03
E I want you to tell me about what you did yesterday.
; 0:10
E Do you remember what you did yesterday?
; 0:04
E Do you remember?
C {nods head}.
E You do?
E What did you do?
C (0:02 Hm 0:03) colour.
E Colour.
; 0:04
E What else did you do?
; 0:08
E Or what did you colour in?
E What were you colouring?
; 0:09
C (Hm 0:02) yellow.
E Pardon?
C Yellow.
E Lego?
C Yellow.
E Oh, yellow.
E What else did you do yesterday?
; 0:07
E Do you remember?
E It's OK if you forget.
; 0:10
E Did you watch TV?
C (Hm 0:05).
E Did you play some sport?
:0:03
C {shakes head}.
E No?
E What about today.
E What have you done at school today?
C X.
E What have you done?
C (Hm 0:11).
E What thing/s did you do with Mrs_Sahin in the classroom?
C (Hm 0:05) cut.
E Cutting?
C Yeah.
C Colour.
E Colouring?
C (Hm ah 0:06).
E That/'s all?
E That/'s all you remember?
C {nods head}.
E That's OK.
E Thanks, Marcus.
Appendix F
SALT-NZAU Transcript – Marcus post-intervention

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Child</td>
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<td>Examiner</td>
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<tr>
<td>0:00</td>
<td>Minutes : Seconds between utterances</td>
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<td>*</td>
<td>Omitted word/suffix</td>
</tr>
<tr>
<td>()</td>
<td>Filled pauses; repetition of words/phrases</td>
</tr>
</tbody>
</table>

$ Child, Examiner
+ Language: English
+ Participant Id: MF
+ Gender: M
+ Grade: 2
+ Context: Con
+ Collect: 14
+ Examiner: BM
+ Transcriber: BM
- 0:00
E So Marcus, I've got a question for you.
E Do you think you know what my question is?
C Yeah.
E Yes?
C Yes.
E What is it?
C What *did you do yesterday.
E Excellent, that's right!
E So, Marcus, what did you do yesterday?
C (Ah 0:03) I go[EW:went] swimming.
; 0:03
C And I play/*ed basketball.
C (And I) and then I go[EW:went] fishing.
; 0:04
C And then I go[EW] play with my ipad.
C And then (0:04 hm) I go[EW:went] to sleep.
; 0:05
E Do you remember anything else?
C I go[EW:went] to Australia_Fair.
E Ooo!
E What did you do there?
C (Hm) shopping (0:04 hm).
; 0:07
C Just shopping.
E: Just shopping?
C: Yeah.
E: Did you buy anything?
C: Yeah (we buy[EW:bought]) we buy[EW:bought] *a scooter.
E: Scooter?
E: Is it for you?
C: Yeah.
E: Have you played with it yet?
C: {nods head}.
E: Yes?
E: So who did you play basketball with?
: 0:04
C: My father and my brother.
E: Oh that sounds like fun.
E: Was it fun?
C: Yeah.
E: Is there anything else you remember about yesterday?
C: (Hm) <>.
E: <Anything> that you did?
: 0:05
E: If not, that's OK.
: 0:07
C: No.
E: No?
E: That's it?
C: Mmm.
E: Excellent.
E: Thanks so much, Marcus.
### Appendix G

**SALT-NZAU Transcript – Megan pre-intervention**

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Child</td>
</tr>
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<td>Examiner</td>
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<td>&lt;&gt;</td>
<td>Overlapping speech</td>
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<tr>
<td>0:00</td>
<td>Minutes : Seconds between utterances</td>
</tr>
<tr>
<td>*</td>
<td>Omitted word/suffix</td>
</tr>
<tr>
<td>()</td>
<td>Filled pauses; repetition of words/phrases</td>
</tr>
</tbody>
</table>

$ Child, Examiner  
+ Language: English  
+ Participant Id: MG  
+ Gender: F  
+ Grade: 1  
+ Ethnicity: Russian  
+ Context: Con  
+ Collect: 1  
+ Examiner: BM  
+ Transcriber: BM  
- 0:00  
E What I’m going to do is I’m going to record your voice.  
C Huh?  
E But, I’m just going to ask you a simple question, and you can say as much as you like.  
C OK.  
E OK?  
E So just like a normal conversation.  
C OK.  
E OK.  
E So my question to you is what did you do yesterday?  
C (Um yesterday I 0:02) yesterday (I) I bought *a magic book.  
C (Hm) and I play/*ed with *the magic book.  
C (And I get[EW:got]) and I get[EW:got] lollies.  
C Inside[EW] yesterday I (play*ed with) play*ed with my brother.  
; 0:03  
C And yesterday my friend/s from Russia said to me (um) my friends will come (ah some*) to Labrador_State_School.  
E They/*re coming here?  
E When?  
C (Um) I don't know.  
E You don't know?  
C Yes, I don't know.
E Oh well, but they're coming here, that's a good thing?
C Yes.
E Yes.
C (Hm).
E Is there anything else you remember doing yesterday?
C (Um) no.
E No?
C No.
E No.
E What about at school, do you remember what you did at school yesterday?
C (Hm 0:02) no I can't remember.
E No activity/s.
E No class you remember?
C (Hm) no.
C No, no I can't remember.
E No, that's OK.
E Thank you so much, Megan.
### Appendix H

SALT-NZAU Transcript – Megan post-intervention

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
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<td>Child</td>
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<td>Omitted word/suffix</td>
</tr>
<tr>
<td>()</td>
<td>Filled pauses; repetition of words/phrases</td>
</tr>
</tbody>
</table>

$ Child, Examiner
+ Language: English
+ Participant Id: MG
+ Gender: F
+ Grade: 1
+ Context: Con
+ Collect: 23
+ Examiner: BM
+ Transcriber: BM
- 0:00
E So Megan, I've got a question for you.
C What did I do yesterday.
E Exactly.
C Let me have a think.
E That's OK, take as much time as you need.
C (I went 0:03 w*) I went outside.
C and (um) I went to play with my friend/s outside near my house.
C (And I forgot where did I went with my friend/s um um) I forgot where do I went with my friends [EU].
E You forgot where you went?
C Yeah.
E That's OK.
E What did you do <with> your friends?
C <Hm>.
C With my friends (we) we were playing.
; 0:03
C Oh yeah, now I remember it.
C (Um we w*) we were because my friend/s[EO] Christina’s mum was teaching us.
E Ooo.
C Yeah.
C And a music lesson.
C And (um) we saw a rainbow.
C Five rainbows.
E Oh wow.
C I mean four.
E Four?
C Yeah, four rainbows.
C (and 0:04) and (hm) that’s all.
E That’s all?
C Yeah.
E Do you remember what you did at school yesterday?
C No I don’t.
E No?
E You don’t remember anything you did at school?
C {laughs} (um 0:02 hm) no.
C Maths.
C I forgot.
E You forgot?
E That’s OK.
E Thanks so much, Megan.