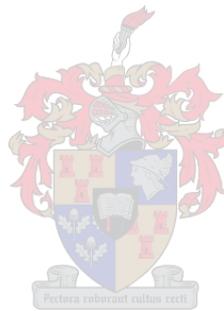


# **Helping control Attention Deficit Disorder behaviour using musical activities**

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Thesis presented in fulfilment of the requirements for the degree of  
Master of Music at Stellenbosch University

Supervisor: Prof. Caroline van Niekerk

March 2013

Co-Supervisor: Prof. Winfried Lüdemann

# Declaration

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By submitting this thesis, I declare that the entirety of the work contained therein is my own, original work, that I am the owner of the copyright thereof (unless to the extent explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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# Abstract

Helping control Attention Deficit Disorder behaviour using musical activities

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## Key terms

**Attention Deficit Hyperactivity Disorder; Comorbid; Educational interventions; Fine motor co-ordination; Iatrogenic damage; Musical activity; Neuron; Neurotransmitter; Ritalin; Synapse**

As a recent graduate, I feel that young educators are graduating from South African universities and are teaching in schools without adequate knowledge of the various learning disabilities and behavioural disorders that many children suffer from. In the context of the Arts & Culture or music classroom, educators especially suffer as they are taught to encourage creativity. However, how can one differentiate between creative behaviour and disruptive behaviour and be certain that bad behaviour is not a symptom of a behavioural disorder?

Upon graduation and starting to teach in the southern suburbs in the Western Cape, the researcher was struck by the number of children diagnosed with behaviour disorders and taking the stimulant medication Ritalin. Yet the notion of medicating a child for a behavioural disorder is not agreeable to many parents and educators to whom the researcher has spoken while researching this topic. The general feeling seems to be that a child should be given space to be creative, but a teacher cannot control a class of at least twenty-five children who are all claiming their own creative rights. This research explores various steps that a music educator can take to control a class of both medicated and non-medicated learners.

The effects of music on the behaviour of learners diagnosed with Attention Deficit Disorder (abbreviated to ADD) have been investigated in various ways over the years and these are described in this thesis. Likewise, information on various prescription medications and non prescription medications that are available in South

Africa are presented to offer options to an educator/parent faced with a child demonstrating behavioural problems. There is also substantiation that by increasing the intake of essential fatty acids and adjusting a child's diet, one can positively enhance behaviour and concentration. The researcher discusses the various foods that should be avoided and those should be enjoyed generously.

The researcher observed learners who were considered problematic in the general classroom in the form of observation of behaviours before and after each musical activity. Class educators were asked to assist the researcher by further observing the selected children's behaviour in the following lesson.

# Opsomming

Die beheersing van Aandagafleibaarheidsindroom deur die gebruik van musikale aktiwiteite

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## Sleutelsterme

**Aandagafleibaarheidsindroom; Fynspierkoördinasie; Iatrogene skade; Medemorbied; Musikale aktiwiteit; Neuron; Neurosender; Onderrigintervensie; Ritalin; Sinaps**

As 'n onlangsgegradueerde, voel ek dat jong onderwysers aan Suid-Afrikaanse universiteite afstudeer en onderrig in skole begin gee sonder voldoende kennis van die verskeie leergestremdhede en gedragsafwykings waaraan 'n groot hoeveelheid kinders ly. In die konteks van die Kuns en Kultuur of musiekklassiekamer is dit vir onderwysers besonder moeilik omdat hulle geleer is om kreatiwiteit aan te moedig. Die probleem is hoe om te onderskei tussen kreatief en ontwrigtende gedrag en hoe om seker te wees of slegte gedrag nie 'n simptoom van 'n gedragsafwyking is nie.

Na graduering en die begin van haar onderrigloopbaan in die suidelike voorstede van die Wes-Kaap is die navorser getref deur die getal kinders wat die stimulant medikasie Ritalin gebruik. Tog sou die meeste ouers en onderwysers waarmee die navorser gepraat het gedurende haar navorsing nie die gebruik van medikasie vir gedragsafwykings verkies nie. Die algemene gevoel is dat die kind die geleentheid gegun behoort te word om kreatief te wees, maar 'n onderwyser kan nie 'n klas van minstens vyf-en-twintig kinders onder beheer hou wat almal hul kreatiewe regte eis nie. Hierdie navorsing ondersoek verskillende stappe wat 'n musiekonderwyser kan neem om 'n klas te beheer met leerlinge wat op en sonder medikasie is.

Die effek van musiek op die gedrag van leerlinge wat gediagnoseer is met Aandagafleibaarheidsindroom (afgekort na AAS) is reeds in verskeie vorme oor die jare ondersoek en word in hierdie tesis beskryf. Inligting aangaande verskeie

voorskrif en nie-voorskrif medikasie wat in Suid-Afrika beskikbaar is, word verskaf om opsies te gee vir 'n opvoeder/ouer wat gekonfronteer word met 'n kind wat gedragsprobleme demonstreer. Daar is ook bewyse dat deur om die inname van essensiële vetsure te verhoog en 'n kind se dieet aan te pas, gedrag en konsentrasie positief beïnvloed kan word. Die navorser bespreek die verskeie kossoorte wat vermy behoort te word teenoor dié wat vryelik geniet kan word.

Die navorser het leerlinge waargeneem wie se gedrag as problematies in die algemene klaskamer beskou was, voor en na elke musikale aktiwiteit. Klasonderwysers is gevra om die navorser by te staan deur verdere waarneming van die kinders se gedrag in die volgende les.

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*Creativity and good music have at least two things in common: (1) Everyone is in favour of them, and, (2) there is little or no agreement about what they are. Virtually every issue of the many educational journals published each month carries at least one reference to the need for creative teaching, creative books, creative living, creative classroom atmosphere, and on and on. However, seldom do the writers and speechmakers who urge creativity state in behavioural terms what creativity is. In essence, what is often implied is that teachers should be creative in teaching their students how to be creative – a nice but not very helpful suggestion (Abeles et al., 1984:148).*

# Chapter One:

## Introduction

---

### 1.1 General Overview

The effects of music on the behaviour of learners<sup>1</sup> diagnosed with Attention Deficit Disorder (abbreviated to ADD<sup>2</sup>) have been investigated in various ways by Cripe (1986) and Jackson (2003), for example. Cripe examined the effect of listening to music on hyperactivity when eight male children (aged six to eight years old), diagnosed with Attention Deficit Hyperactivity Disorder (abbreviated to ADHD), were observed doing tasks while listening and not listening to repetitive rock music. Research has shown that a repetitive beat produces a reduction in muscle tension and therefore reduces hyperactivity. Cripe concluded that the learners were significantly less hyperactive during the rock music sessions than during the silent sessions (Cripe, 1986).

In 2003, Jackson conducted a survey whereby ninety-eight professional music therapists responded regarding their personal beliefs on AD/HD (Attention Deficit/Hyperactivity Disorder) and the effectiveness of various practices on learners with AD/HD symptoms. In general, most felt that children showing AD/HD symptoms benefit from participating in musical activities, as this allows them to be creative within the boundaries of a structure. Other general comments from the therapists included: musical activities decrease frustration and resistance in AD/HD children, multi-sensory activities help to keep AD/HD students on task, group music activities are the times when some AD/HD children are the most calm and engaged and group musical activities that require turn-taking are particularly helpful in achieving long-term goals (Jackson, 2003:307).

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<sup>1</sup> The researcher makes use of the terms learners, students, boys, pupils and children interchangeably.

<sup>2</sup> See the introductory page of Chapter Two, indicating the renaming of ADD to AD/HD in 1987, to include hyperactivity as a symptom. In this thesis, however, the term ADD will mostly be used, indicating that hyperactivity may not necessarily be present. The researcher uses both AD/HD and ADHD, as and when different authors are referred to, and they may use the one spelling or the other.

There is a definite lack of preparation for dealing with the symptoms of Attention Deficit Disorders among educators working with children in the creative fields (Cramond, 1994:193). Cramond found this especially when dealing with learners and motivating creative behaviour; this research could aid unprepared South African educators<sup>3</sup> finding themselves teaching Arts & Culture to classrooms containing learners diagnosed with attention deficit disorders. Some educators may be in less advantageous areas where medication is not an option due to lack of funding. The researcher explored the relationship between attention deficit disorders and creativity and how an educator can help control an ADD learner's behaviour using musical activities.

Information on ADD and its recorded symptoms are presented for educators. Various alternative remedies that are available in South Africa have been researched; what they do and how they differ from stimulant medications. This information will be beneficial to educators as the researcher contends that an understanding of how medications, homeopathic or prescription, can alter a child's behaviour and personality is key to successfully teaching an ADD learner.

The researcher has aimed to demonstrate that specific music activities performed before the start of a session (set of periods between breaks) or lesson could help control the behaviour of learners diagnosed with attention deficit disorders. Such activities would be more beneficial for a young child's health over the use of long term medication. This research could further assist South African Arts & Culture and Music educators to know the relationship between ADD behaviour and creativity, how diagnosed learners can be affected by music and how to use music to the benefit of one's whole classroom, including any ADD learners. The intention is to educate teachers who have difficulty distinguishing between an excited class and a class with individuals suffering from behavioural disorders. This can be a very fine line, especially in Music pedagogy.

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<sup>3</sup> The researcher makes use of the terms educators and teachers interchangeably.

## **1.2 Target Group**

As a fairly recently graduated music educator in South Africa today, the researcher felt unprepared to teach Arts & Culture to classes with diagnosed ADD learners. Basic and essential information about ADD, what it is and what the common symptoms are in primary school level boys and girls, is generally not taught to graduating music educators. Many schools intervene regarding the use of prescription medications, which were researched in order to formalize a coherent view. There are several therapies that are available and being used: the research aimed to determine their relevance to assisting individuals with ADD. Homeopathic remedies are available, at considerable costs, and promise calmer and more controlled behaviours; these were also investigated.

As an educator, one is expected to include each and every child in your classroom in your lesson. Educators often have to face classrooms with an increasing number of children with learning disabilities and behavioural disorders. However, often music educators are not informed of the various problems each general classroom educator faces each day (Wilson and McCrary, 1996:26). The researcher wants to provide a clear description of ADD, the behaviours associated with the disorder and the various treatments available. With this information, recently graduated music educators will be better equipped to not only teach their own lessons, but also better prepare learners for their lessons following music.

## **1.3 Motivation for the research topic**

Behavioural disorders are not visible conditions, and therefore can take a music educator off guard if a child suddenly becomes aggressive or overly passive in the classroom environment. Educators, including music educators, need to understand behavioural disorders in order to manage and prevent disruptive behaviours.

## **1.4 Research goals**

Specific issues found when teaching Music and Arts & Culture to primary school level male individuals who have been diagnosed with ADD have been covered. The aim was to investigate the effects of specific musical activities performed with

classes and the varying effects on those diagnosed individuals using methylphenidate<sup>4</sup> (Ritalin) and other behaviour modifying medications.

Four boys' and three girls' primary schools in the southern suburbs of Cape Town were surveyed to determine what protocol is followed when a child potentially needs to be placed on a stimulant medication, such as dextromphetamine and methylphenidate supplements, to control the behavioural characteristics commonly associated with and found in ADD sufferers. The schools surrounding Rondebosch Boys' Preparatory School were considered during this research, namely South African College School, Diocesan College and Wynberg Boys' Junior School. Boys' schools were focused on due to the higher number of boys affected by ADD over girls; however, the girls' schools made for interesting comparisons. Ritalin appears to have grown very popular and the aim was to establish the reasoning behind this, with special regard to the South African music classroom. If one is to teach Arts & Culture, with various movements and dramatic exercises, how can one do so successfully if learners are unable to control their behaviour? If learners are taking prescribed medication, how does this affect educators' ability to teach creative concepts to them?

ADD has been described as a disorder; how does it affect learners and how can music educators understand this so that they can use the insights to their advantage when teaching a class? During this research a series of lesson plans was compiled, using musical activity with a view to helping control the behaviour of a class. By using specific music at particular tempi and always at a volume where the teacher can be heard, one can set a child's frame of mind for an identified sphere of learning. These lesson plans are provided in Addendum G.

## **1.5 Research questions**

The research problem addressed in this study is indicated by two research questions:

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<sup>4</sup> The researcher refers to Ritalin extensively throughout this thesis. The actual medication is methylphenidate; well known generics include Concerta, but the widely known medication name is Ritalin.

- 1) What interventions can help equip South African Music educators to effectively teach learners demonstrating ADD behaviour in an Arts & Culture classroom setup?
- 2) To what extent can musical activity be used to benefit the learning potential in a classroom by means of helping to manage behavioural issues associated with ADD?

## 1.6 Research structure

Case studies were conducted in the researcher's classroom and recorded weekly. Each child was chosen by his classroom teacher who felt that he displayed possible behavioural disorders. Not each of the case studies has been diagnosed with ADD, but some parents have received recommendations to have their son tested. More details are included in the addendum. These case studies were used to investigate the use of musical activities, presented in formal lesson plans and then their behaviour was monitored in the following lessons. The letter of permission and an example of the observation of behaviour form are provided in the addenda A and H. As each class educator was accustomed to the children's behaviours, they were able to confirm whether or not they observed a noticeable change after the musical activity. Each class had a set scheduled lesson for one half hour period each week. Classes A and B both started a day with Arts & Culture, whereas Class C had the lesson straight after lunch and Class D were on a Friday after lunch. Each class participated in the five activities (Theta, Delta, Beta, SMR and High Beta<sup>5</sup>) once per term over the space of three terms.

After the musical activity, the class educator of the following lesson observed the behaviours of the specified children from those who were selected from their ed lab files (see chapter four) by the researcher and class educator, consulting together. More information on each candidate is provided in chapter four to better explain why they were selected for particular observation. It must be stressed that the children were never approached or questioned about the musical activities; the aspect of

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<sup>5</sup> The various bandwidths are discussed at length in the fourth chapter.

importance for this research was to see if it could be noted that their behaviour had changed after the musical activity at the end of the Arts & Culture lesson.

The extensive data list helped to build a firm framework for the case studies. The literature review was also used to investigate the causes of ADD, the behaviours associated with the disorder as well as the various treatments available and the link between creative behaviour and behaviours associated with ADD in the classroom environment.

## **1.7 Methodology**

This research was qualitative and based on both case studies and literature review. The case studies were conducted in the environment (the classroom) in which the subjects (specified children displaying behavioural disorders) felt comfortable.

*In attempting to understand qualitative research, it is critical to delineate its foci and its goals. First, qualitative researchers seek to acquire in-depth and intimate information about a smaller group of persons. Second, the aim of qualitative research is to learn about how and why people behave, think, and make meaning as they do, rather than focusing on what people do or believe on a large scale (Ambert et al., 1995: 880).*

As described by Ambert et al., the qualitative research method involved studying a fairly small group of individuals to observe whether or not their behaviour seemed to change and why. The individuals were monitored over the period of three terms/one year for an extensive account of their behavioural changes. Each class teacher was asked to observe the children before and after the activities, in addition to observations by the researcher during the actual lesson. Notes were made and completed by the class teachers and these were compiled into table form illustrating each individual's behaviour over the period of time. In this way, changes were mapped in individuals' behaviour.

The information and knowledge gained from the literature research assisted the case studies as the researcher had a far better understanding of what to expect and look out for in the classroom.

## **1.8 Literature review**

The researcher established a comprehensive literature list from which the topic was viewed from many varying angles. The focus was more on ADD than on musical and music educational aspects, about which music educators should have adequate knowledge. ADD was looked at from a naive perspective as the researcher had little knowledge about the disorder prior to the writing of this thesis. The origin of the disorder is explained in terms of the functioning of the brain and describing what fails neurologically to cause it. There is much debate over the various medications available and the researcher compiled a list of the current medications, stimulant and non-stimulant, that are available in South Africa. A summary of the side effects accompanies this list in chapter two.

There are also several forms of therapy that are used as possible treatments, or as a part of a treatment plan, for behavioural disorders. As many unacceptable behaviours are negative effects of an entirely different problem, such as poor vision and therefore frustration and boredom in the classroom, therapies were researched and described. Such information is beneficial for an educator to have, as he or she is able to offer an alternative to stimulant medication if ever placed in a situation with parents of a problematic child.

Diet is an essential part of a child's development as nutrients are needed for healthy growth and nourishment. Certain dietary regimes can assist in behaviour improvement and concentration due to less sugar, for example, and increase in omega oils. A few simple changes to children's diet can make a large difference to their conduct in the classroom.

Apart from reference books, educational, medical and psychological journals as well as the world wide web were used.

## **1.9 Defining of key terms**

Important and relevant key terms to this study are listed below in alphabetical order.

### **1.9.1 Attention Deficit Hyperactivity Disorder (ADHD)**

According to the National Institute of Neurological Disorders in the USA and Canada, ADHD is a neurobehavioural developmental disorder affecting about 3 to 5% of the world's population. It typically presents during childhood, and is characterized by a persistent pattern of impulsiveness and inattention, with a component of hyperactivity. ADHD occurs twice as commonly in boys as in girls. ADHD is generally a chronic disorder with 5 to 12% of individuals diagnosed in childhood continuing to meet diagnostic criteria in adulthood. As they mature, adolescents and adults with ADHD are likely to develop coping mechanisms to compensate for their impairment

(<http://www.ninds.nih.gov/disorders/adhd/adhd.htm>).

### **1.9.2 Comorbid**

Some authorities contend that ADD and ADHD are comorbid, meaning that the disorders will occur with, but independent of, other disorders. A study conducted in 1996 revealed that oppositional defiant disorder, conduct disorder, depressive disorder, anxiety disorder and learning disabilities were all prevalent with AD/HD (Green et al., 1999: 43).

### **1.9.3 Fine motor co-ordination**

Fine motor co-ordination refers to a person's ability to successfully accomplish certain motor skills, such as buttoning a shirt, cutting paper, writing, drawing and tying.

### **1.9.4 Iatrogenic damage**

One of the possible causes of ADD, this is a side effect from medication or a medical procedure which negatively impacts upon the child.

### **1.9.5 Musical activity**

For the purpose of the study, the use of movement will be used in collaboration with specific music to manipulate the brainwaves before continuing with the set class activities and tasks. The use of various musical activities can assist interchanging between the different brainwaves. By choosing specific music, the researcher is able *inter alia* to better equip the class for the lesson that follows the Arts & Culture lesson. Therefore, by no means was the term “manipulate” used negatively while conducting the case studies.

### **1.9.6 Neuron**

A neuron is a nerve cell. Billions of neurons make up the brain and the nervous system. Neurons pass information from the brain to various parts of the body and back to the brain.

### **1.9.7 Neurotransmitter**

Neurotransmitters are specific chemicals that serve to carry information from one neuron to the next across the synapse (see 1.9.9 below).

### **1.9.8 Ritalin**

The Medication Guide for Ritalin (May 2010) reads, “Ritalin LA® is a central nervous system stimulant prescription medicine. It is used for the treatment of Attention-Deficit Hyperactivity Disorder (ADHD). Ritalin LA® may help increase attention and decrease impulsiveness and hyperactivity in patients with ADHD”.

### **1.9.9 Synapse**

The synapse is a tiny gap found between two neurons.

## **1.10 Chapter Layout**

In this first chapter, the researcher describes her concerns regarding the teaching of children with ADD in the classroom as she felt inadequately prepared when she

graduated. The research structure is discussed and key terms are defined for readers.

The second chapter goes into detail on the suspected causes of ADD and the various treatments available in South Africa. Diet, stimulant and non-stimulant medications are discussed and an assortment of therapies is presented to the reader. The researcher indicates every option that parents of observed individuals were given to treat their sons; the list of medications available can be daunting and thus the breakdown is a visual table for easy reading. The brain is illustrated and discussed to describe how ADD affects neurological functions and, furthermore, how it can affect adults if not treated. The chapter ends by promoting the use of essential fatty acids and listing other diagnoses frequently associated with ADD.

The third chapter discusses creative behaviour. It was important for the researcher to include this chapter as often in the classroom children could be excused for spontaneous and/or disruptive behaviour as they are considered to be “creative”. As the case studies were conducted in the southern suburbs, surrounding schools were asked what protocol is followed when their classes are continuously interrupted by disruptive behaviour. The various types of interventions are presented to the reader, the aim being to prepare teachers and parents alike.

Chapter four describes the case studies and the use of musical activity in the classroom. The structure of the case studies is presented and each individual who was observed is summarised in terms of what medications or therapies he has had or is having. The chapter presents the various bandwidths and their effect on learning areas. The researcher includes her results in this chapter.

The fifth and final chapter summarises and concludes the research and recommendations are offered.

# Chapter Two:

## ADD and its various treatment options

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### 2.1 The history of ADD

The debate as to the existence of ADD is controversial among researchers. Some believe that there is insufficient evidence while others refer to this as a syndrome. Those who label it as a disorder believe that ADD can be defined as a neurochemical imbalance in certain areas of the brain, causing a developmental disorder of self-control. ADD can therefore broadly be defined as a developmental disorder which is characterized by inappropriate behaviour proportionate to an individual's level of cognitive and emotional development (Reitz, 2006). According to Rubia and Smith (2001), ADD and AD/HD are also comorbid, meaning that the disorders can occur with, but will remain independent of, other disorders such as Tourette's Syndrome (Picton, 2005). In the 1950s, AD/HD was referred to as Minimal Brain Dysfunction (MBD), Hyperactive Syndrome, and Hyperactive Disorder of Childhood (Conrad and Potter, 2000:561).

At the start of 1968, the *Diagnostic and Statistical Manual* (second edition) identified minimal brain dysfunction as a childhood disorder which was characterized by "over-activity, restlessness, distractibility, and short attention span, especially in young children; the behaviour usually diminishes in adolescence" (APA, 1968).

The defining characteristics of hyperactivity and inattention continued to be used in various medical diagnostic combinations over the following thirty years (Stewart et al., 1966; Wender, 1971). The third edition of the *Diagnostic and Statistical Manual* in 1987 renamed ADD to AD/HD to include the condition of hyperactivity as a symptom (Newcorn et al., 1989). The *Diagnostic and Statistical Manual* (fourth edition) classified AD/HD as a medical condition in 1996 (Pooley, 2009:5). The researcher will only refer to ADD as she does not deal specifically with the hyperactivity aspect.

*Hyperactivity, or attention deficit disorder, is a significant deficit in age-appropriate attention, impulse control and rule governed behaviour (compliance, self-control and problem-solving) that arises at infancy or early childhood, is significantly pervasive in nature, and is not the direct result of general intellectual retardation, severe language delay or emotional disturbances, or gross sensory or motor retardation (Picton, 2005).*

*Attention deficit hyperactivity disorder (ADHD) is one of the most common childhood disorders and can continue through adolescence and adulthood. Symptoms include difficulty staying focused and paying attention, difficulty controlling behaviour, and hyperactivity (over-activity) (National Institute of Mental Health, 1997).*

## **2.2 The causes of ADD**

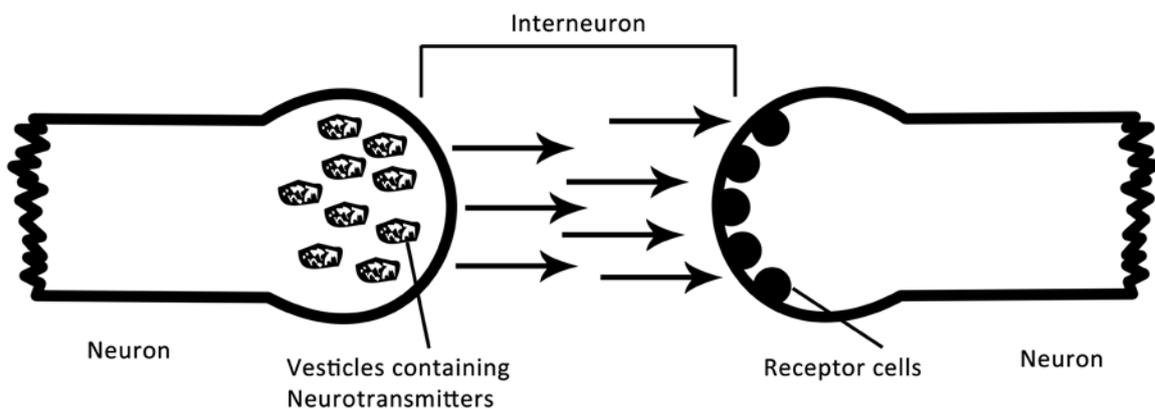
There are five proposed predominant causes for ADD (Pooley, 2009), namely:

- 1) neurological: an imbalance of neurotransmitters
- 2) lack of essential fatty acids (a deficiency of Prostaglandin E1, E3 and Leucotrienes)
- 3) emotional (any child experiencing extreme stress can display the symptoms of ADD)
- 4) iatrogenic damage (a side effect of a medical procedure) and
- 5) foetal damage (caused by a substance abuse).

In the cases of iatrogenic and foetal damage, children are affected by medications or procedures. Children who, for instance, have undergone chemotherapy have developed ADD and children born from mothers who were using illegal substances or abusing alcohol have learning disabilities and symptoms of ADD. If a child is not responding to the usual ADD medications, then emotional factors could be at play. This would include physical and emotional abuse or a distressed home situation. Children suffering from ADD are generally very sensitive and will, therefore, display

emotional pain for much longer than other children suffering from negative experiences such as a result of their parents' divorce.

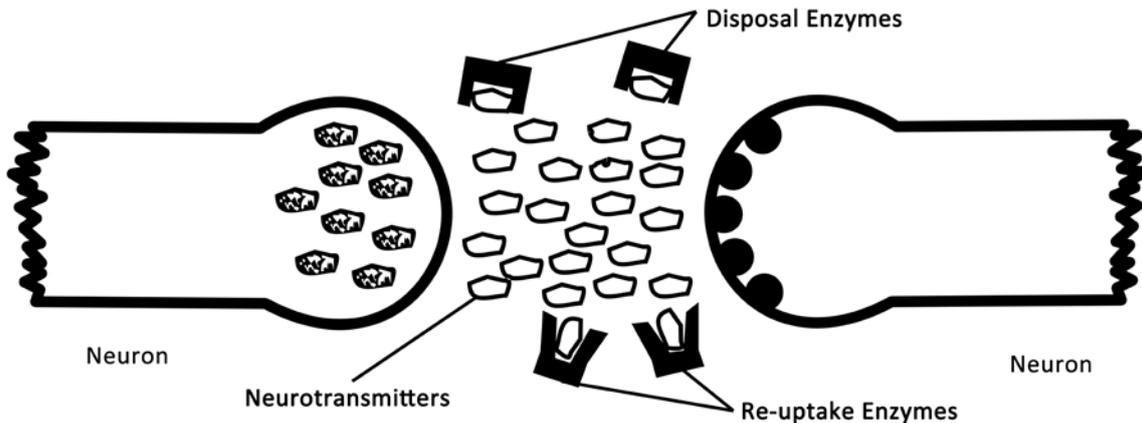
Neurological origins are still debatable by medical researchers as different children, affected by different factors, display a very wide and varied spectrum of symptoms. The brain and the nervous system are made up of over 100 billion nerve cells that are called neurons. Neurons are responsible for relaying messages from the brain to all over the body, and back again. Neurons also make communication between different parts of the brain possible. Under closer inspection, the nerve cells of neurons (called dendrites) receive each nerve message. This is sent down the axon (a hair-like extension between two neurons that carries messages from one neuron to the next) of the neuron to the end terminal, where the message is handed to the next neuron (Pooley, 2009).



**Figure 1: Diagram illustrating a synapse or synaptic cleft between two neurons. Adapted from Pooley, 2009:31**

Between each neuron is a small gap called a synapse (sometimes referred to as synaptic cleft). The message moves from neuron to neuron by means of specific chemicals called neurotransmitters. There are at least one hundred known neurotransmitters. Once a neurotransmitter has delivered the message to the next neuron, it returns to the first neuron where it is stored in preparation for its next use. Any neurotransmitter that fails to return to the first neuron will be picked up by

enzymes, called mono-amine inhibitors, and disposed of in the bloodstream. *Interneurons* are cell bodies that exist within the actual synapse. It is believed that the function of interneurons is to control the neurotransmitters that are delivering messages from one neuron to the next (Picton, 2005:9).



**Figure 2: Synapse - neurotransmitters are removed from synapse after use by re-uptake enzymes and disposal enzymes. Adapted from Pooley, 2009:31**

For sufferers of ADD, the aforementioned process does not work as it should. Possible reasons for why the process fails include:

- 1) The interneurons may not be working correctly;
- 2) The receptor cell (the cell that receives the message from the neurotransmitters) may not be working correctly or there are not enough cells;
- 3) The disposal enzymes (mono-amine inhibitors) may be working too efficiently and possibly removing the transmitter before it has had the opportunity to deliver its message;
- 4) The neurons may be secreting an insufficient amount of the needed transmitter.

The following behavioural problems that are commonly found with a child suffering from ADD have been categorised by Picton (2005:4-5):

**Table 1: Behavioural problems commonly found with a child suffering from ADD**

<b>Co-ordination</b>	<b>Attention</b>	<b>Learning Disabilities &amp; Difficulties</b>	<b>General</b>
Speech: stuttering, stammering, pronunciation	Short attention span	Auditory: difficulty remembering details	Persevering: repeating a meaningless action, fidgets, squirms
Fine co-ordination: difficulty with buttoning, tying, writing, drawing and cutting	Easily distracted	Visual: difficulty when copying from blackboard	Punishment increases frustration and causes further tantrums
Gross co-ordination: clumsy, collides with objects, inability to play sport, swim or cycle	Tends to daydream	Difficulty in reasoning (the meaning of words, maths equations)	Poor planners; lack organisational skills
	Unable to concentrate		Emotionally, physically and academically immature for their age, clingy

Apart from the abovementioned indications, physical characteristics of children suffering from ADD include: can be underweight, allergies to foods and substances, unquenchable thirst and abnormal appetite. Children diagnosed with ADD are also often unable to express themselves clearly as they tend to mumble, and speech is often fast and incoherent. Interestingly, ADD children are able to communicate with one another and their poor linguistic skills appear to only affect non-sufferers (Bester, 2006:38).

When a parent is advised that his or her child exhibits behavioural problems in the classroom, an initial interview should be conducted. From this interview, teachers, therapists and parents can obtain necessary information to determine if the child will need further assistance. Questions in such an interview could include: was your child's birth normal?, were there any complications or traumas from shortly after birth until two years of age?, was your child a calm or restless baby?, did your child achieve the developmental milestones within the normal timeframe?, what are your main complaints? does your child get up on time in the mornings and is he or she ready for school on time? (Bester, 2006:33).

Prescription medications work to increase the levels of neurotransmitters, which assist focus and impulse control so that a child can develop normally. ADD can be medicated with either stimulant or non-stimulant medications. Methylphenidate (Ritalin) is the most common prescribed stimulant, with Axtomoxetine (Strattera) being the most common non-stimulant (Sidley, 2008). Ritalin has been the subject of much controversy over the years as it is speculated to have several side effects. Furthermore, there is also very little research describing the long term effects Ritalin will have on an individual (Malacrida, 2002). In the late 1970s, several longitudinal studies followed adults who had been diagnosed with hyperactivity ten or more years previously as children. In this research, 66% of candidates followed still illustrated symptoms of hyperactivity although they were now adults (Weiss et al., 1979). In 2005, a report on cytogenic effects, observed in peripheral lymphocytes from twelve children diagnosed with ADD and treated with Ritalin for three months, raised questions and concern about the toxicity of this drug. The authors of this study stated

that, “the lack of research on long-term effects of methylphenidate use in humans warrants great concern” (Walitza et al., 2007).

## **2.3 Stimulant medication: Ritalin and other medications**

During the 1980s, and again in the late 1990s, religious groups in the USA ran propaganda campaigns against ADD medication (namely Ritalin) and were very successful in their attempts to have parents choosing not to medicate their children. These groups claimed that Ritalin could be abused as other stimulant medication was abused according to the Drug Enforcement Administration in the USA (Barkley, 2005). These findings suggest that parents (and teachers) understand the side effects of the medication and how it works.

According to the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorder (DSM-IV)*, the criteria for diagnosing and subsequently prescribing Ritalin include the following (Dunn, 2002):

- 1) Symptoms must occur in two or more different settings and must illustrate evidence of significant impairment in school, social or work settings.
- 2) Symptoms must persist for more than six months.
- 3) Symptoms must have been present before the age of seven years.

As the diagnosis of ADD has increased rapidly from 1990, so has the administration of prescription medication to assist learners, particularly in the school environment (Purdie et al., 2002).

### **2.3.1 How Ritalin works**

The active constituent of Ritalin is methylphenidate hydrochloride, the latter being a central nervous system stimulant. There are three general forms of Ritalin, namely the “regular” Ritalin, Ritalin SR (slow release) 20 and Ritalin LA (long-acting) 20 (each number refers to the milligrams of Ritalin in each capsule. Ritalin is also

available in 30 and 40). Taylor discusses two theories regarding the workings of Ritalin: The first theory states that the medication acts chemically like dopamine and therefore adds additional synthetic dopamine to the brain. The second theory is that the Ritalin aids the release of formed neurotransmitters (dopamine and noradrenalin) and cannot influence the production of neurotransmitters (Taylor, 2003).

A “normal” dose of Ritalin contains 10 mg of methylphenidate chloride. It is absorbed quickly when taken with food and will take approximately one to two hours to be effective. The effect of a dosage of Ritalin lasts for approximately four hours. This form of Ritalin is usually prescribed for preschool children (at 5 mg) and to older children at 10 mg. A second and third daily dosage can also be prescribed.

Ritalin SR 20 is a slow release tablet containing 20 mg of methylphenidate hydrochloride, which is released into the body’s system slowly and takes approximately three hours to be fully absorbed after administration. This form of Ritalin has an efficacy period of roughly eight hours, and is therefore usually prescribed in one daily dosage. Ritalin SR is more likely to be prescribed to those with a less serious diagnosis of AD/HD (South African Electronic Package Inserts, 2009).

Ritalin LA 20, LA 30 and LA 40 are long-acting forms of the medication and are essentially two dosages of Ritalin in one tablet. Half of these capsules are released immediately into the body’s system; the other half is slowly released four hours later and can be administered without food.

Side effects of Ritalin include hyperactivity, convulsions, muscle cramps and depression. Other side effects include a loss of appetite, sleep deprivation and anxiety. Sleep deprivation and anxiety are, however, more common when patients have recently started medication and can be controlled by regular use of medication and a nap if necessary.

In South Africa, the following generics of Ritalin are available: Ritafin, Methylphenidate HCl-Douglas 10mg and Riaphen 10mg. An alternative to Ritalin is

Concerta, which has been available in South Africa since 2005. This medication is advantageous as there is only one daily dosage required and the efficacy rate is lengthened to that of twelve hours (Bester, 2006:128).

### **2.3.2 Non-stimulant medication**

*Although they are not as effective as the stimulants, several drugs called antidepressants and a drug called clonidine, used to treat high blood pressure, can be of some benefit to those with ADHD (Barkley, 2005).*

Unlike stimulant medication, non-stimulant medication is not able to reach its full effect after a single dose but rather requires four to six weeks of treatment to be beneficial. Commonly used tricyclic antidepressants for the treatment of ADD symptoms include Tofranil (the generic is called imipramine), Tryptanol (the generic is called amitriptyline) and Zyban (the generic is called bupropion hydrochloride). These medications are found to assist with not only ADD symptoms but can also assist children with anxiety, panic, bed-wetting problems and sleep-associated problems such as night terrors. As with other behaviour altering medications, the tricyclic anti-depressants work by altering the brain chemistry in certain areas. For the treatment of ADD, the antidepressants (as well as stimulant medication) increase the amount of norepinephrine and dopamine available in the frontal areas of the brain. Unfortunately, the effects of these medications do not exhibit themselves immediately and it can take up to several weeks to determine whether or not the medication or the specific dose of medication is working (Barkley, 2005).

### **2.3.3 Medications used to treat ADD in South Africa**

The following table was adapted from that of Heather Picton (2005:34). This table summarises medications, stimulant and non-stimulant, that are currently available in South Africa.

**Table 2: Various medications available in South Africa**

<b>Medication (Drug name &amp; product)</b>	<b>Notes on medication</b>	<b>Possible side effects</b>
Stimulants: <b>METHYL-PHENIDATE</b>  1. Ritalin 2. Ritalin SR20 3. Ritalin LA	1. Works within half an hour and lasts for approximately 3-4 hours. Helps 76% of ADD children by decreasing impulsivity  2. Lasts for longer period of 6-8 hours. (SR= "Slow Release")  3. A combination of Ritalin and Ritalin SR20 that lasts for 6-8 hours with a single dosage.	Side effects for three types of Ritalin include:  Decreased appetite  Weight loss  Insomnia  Headache  Stomach ache
<b>RISPERIDONE</b>  Risperdal	Medication used, often with Ritalin, to treat Conduct Disorder (discussed under 2.7.4), aggression and behaviours associated with ADD. While this medication can improve concentration, it also has a sedative effect and should therefore be taken at night time.	Weight gain  Tremors
<b>IMIPRAMINE</b>  Tofranil	The medication most frequently given to a child who reacts negatively to Ritalin; a depressed or anxious child; a child over the age of 5 years who still wets his or her bed. A single dose lasts up to 24 hours.	Dry mouth  Dizziness  Headache  Blurred vision  Urinary incontinence

Medication (Drug name & product)	Notes on medication	Possible side effects
CITALOPRAM HYDRO-BROMIDE Cipramil	The medication that is replacing Trofanil <sup>6</sup> as it is less harmful to children's hearts. Used in conjunction with Ritalin it counteracts Ritalin's side effects.	(Side effects are seldom experienced) Sweating Decreased pulse rate Nasal congestion
HALOPERIDOL Serenace	The medication that is frequently used to treat children with Tourette's Syndrome or who display destructive and aggressive behaviours.	
SULPIRIDE Eglonyl	Used to treat Tourette's Syndrome and in conjunction with Ritalin to counteract Ritalin's side effects.	Dry mouth Sleep irregularities Lactation (female patients)
DEXTROM-PHETAMINE Dexedrine Dextrostat	This medication is approved as a treatment for ADD and narcolepsy ( <a href="http://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicalProducts/default.htm">http://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicalProducts/default.htm</a> ). <sup>7</sup> It also used to treat obesity and, illegally, it is used recreationally.	Side effects include restlessness, tremors, confusion, aggression and panic.

<sup>6</sup> This medication is called imipramine and the brand names are Imavate and Trofanil. This is a tricyclic antidepressant used to treat clinical depression.

<sup>7</sup> Narcolepsy is a sleep disorder involving sudden and uncontrollable episodes of deep sleep.

<b>Medication (Drug name &amp; product)</b>	<b>Notes on medication</b>	<b>Possible side effects</b>
<p>CONCERTA</p> <p>This generic of Ritalin has been available in South Africa since 2005</p>	<p>Concerta is the most commonly prescribed stimulant medication for the treatment of ADD in South Africa. Concerta affects behaviour after one hour and lasts up to 12 hours with a single dosage (<a href="http://www.concerta.net/children/about-adhd-treatment-options.html">www.concerta.net/children/about-adhd-treatment-options.html</a>).</p>	<p>Abdominal pain</p> <p>Irritability</p> <p>Loss of appetite</p>
<p>Non-stimulants: EYE-Q</p>	<p>Eye-Q is a product that is high in Omega 3 fatty acids, which are key in the development of the eye and brain, coordination, memory and learning ability. There are various products available but each contains Omega 3 marine triglycerides, EPA (eicosapentaenoic acid), DHA (docosahexaenoic acid) and evening primrose oil (<a href="http://www.alternativehealth.com.au/Product/eyeQ.htm">www.alternativehealth.com.au/Product/eyeQ.htm</a>).</p>	<p>Eye-Q is a natural product and does not exhibit side effects</p>
<p>BIOSTRATH</p>	<p>Biostrath is a herbal yeast food supplement that, when taken in conjunction with a healthy diet, improves concentration and vitality while also diminishing aggression, fatigue and agitation. This supplement is available in liquid or tablet form and is completely natural (<a href="http://www.sanatural.co.za/bio-strath">www.sanatural.co.za/bio-strath</a>).</p>	<p>Some patients might find that the ingredients of honey and malt extract can cause mild nausea</p>

<b>Medication (Drug name &amp; product)</b>	<b>Notes on medication</b>	<b>Possible side effects</b>
AXTO- MOXETINE Strattera	Only non-stimulant medication that is safe for long term use although it does not work as quickly or as effectively as stimulant medications.	Nausea, upset stomach, weight loss and dry mouth

### 2.3.4 Homeopathy for ADD in South Africa

Parents to whom the researcher has spoken with regards to this research tend to want to avoid medicating their children for fear that it will alter their personalities. Many parents are turning to homeopathy and there are now over four hundred registered homeopaths in South Africa (Picton, 2005:33).

A homeopath is a registered physician who treats medical conditions with natural remedies as opposed to the use of stimulant medications. When treating a child suffering from ADD, a homeopath will consider both the child's ability to absorb information and remember it, as well as his or her emotional state. A simple event at school, such as not making a particular sports team, could affect a child's concentration in the classroom. Other considerations include nutritional status and the physical issues a child might be experiencing, for example skin irritations, a runny nose or twitches. Each case is individualised depending on the child and his or her needs (Picton, 2005:36).

Pooley (2010) has not found a homeopathic medication that helps severe ADHD as effectively as the stimulant medication listed above. Pooley does agree that homeopathic medications will improve a child's general health and could assist his or her behaviour, learning and concentration.

### **2.3.5 Symptomatic therapies**

Symptomatic therapies treat the symptoms of a disease and not its cause. Such treatments are used to reduce the symptoms and as ADD is caused by a neurological imbalance, a child will be affected throughout his or her development and sometimes specialised help or therapies are required. These therapies would be used in conjunction with a healthy diet and medication for best results (Pooley, 2010).

#### **2.3.5.1 Music Therapy**

An example of a symptomatic therapy is music therapy, which is the controlled use of music and its influences on the human being to aid in the physiological, psychological and emotional integration of the patient during the treatment of an illness or disability (Munro, 1978:1029). This established method of therapy uses music as a therapeutic stimulus to achieve goals that are non-musical. Music can be used to promote learning in the classroom, speech development and motor skills (Standley, 1996:108). An individual suffering from learning disabilities can benefit from music therapy in the following ways: the reinforcement of identity and self-concept, easing feelings of anxiety and by providing an opportunity to participate in a group.

#### **2.3.5.2 Light vision therapy**

This therapy will begin with a routine comprehensive eye examination in order to rule out any visual delays, refractions or hyperopia (long sightedness). The therapist will also conduct a Monroy test which will ascertain the level of the child's visual memory. This test is scored according to chronological age, for example: a child could score the age equivalent of eight years and two months, but this could be five months below his or her chronological age. Reading tests will illustrate any problems in skipping words and lines or repeating words. If a child has poor oculomotor functions (eye movement), but is very intelligent, the brain will attempt to function at maximum speed while the visual system is unable to operate at the same speed (Case study candidate's ed lab file, 2009).

### **2.3.5.3 Occupational therapy**

Occupational therapy assists the improvement of the motor skills, coordination and visual motor coordination. Once children start regaining control over their own bodies, they will be more confident in the classroom and with sporting activities. This is essential for leading a full and satisfying life.

### **2.3.5.4 Psychotherapy**

Psychotherapy is therapy that is conducted in a one-on-one session with a counsellor or psychotherapist. The therapist uses a range of various techniques to improve relationships and dialogue; including communication exercise, behaviour change and relationship building exercises. A child can develop emotional problems as he or she works through many difficulties as an ADD sufferer. It is recommended that emotional problems are addressed before they become permanent.

### **2.3.5.5 Physiotherapy**

Physiotherapy is traditionally used to develop, restore or maintain maximum movement and physical ability in an individual who requires physical assistance. ADD children can benefit from physiotherapy, especially when used in conjunction with occupational therapy, as it will improve coordination, posture and balance.

### **2.3.5.6 Remedial therapy**

A child could struggle academically when suffering from ADD as he or she is unable to concentrate for extended periods of time. This makes the basic classroom environment difficult for the child. It is possible that a child missed out on basic steps in his or her education and cannot progress as he or she has fallen behind. Remedial therapy or education offers focused sessions to help the child catch up in specific areas of learning: reading, maths and writing skills. Remedial therapists will also advise parents on additional exercises that can be done at home to assist the child's progress (Bester, 2006:91).

### **2.3.5.7 Speech and language therapy**

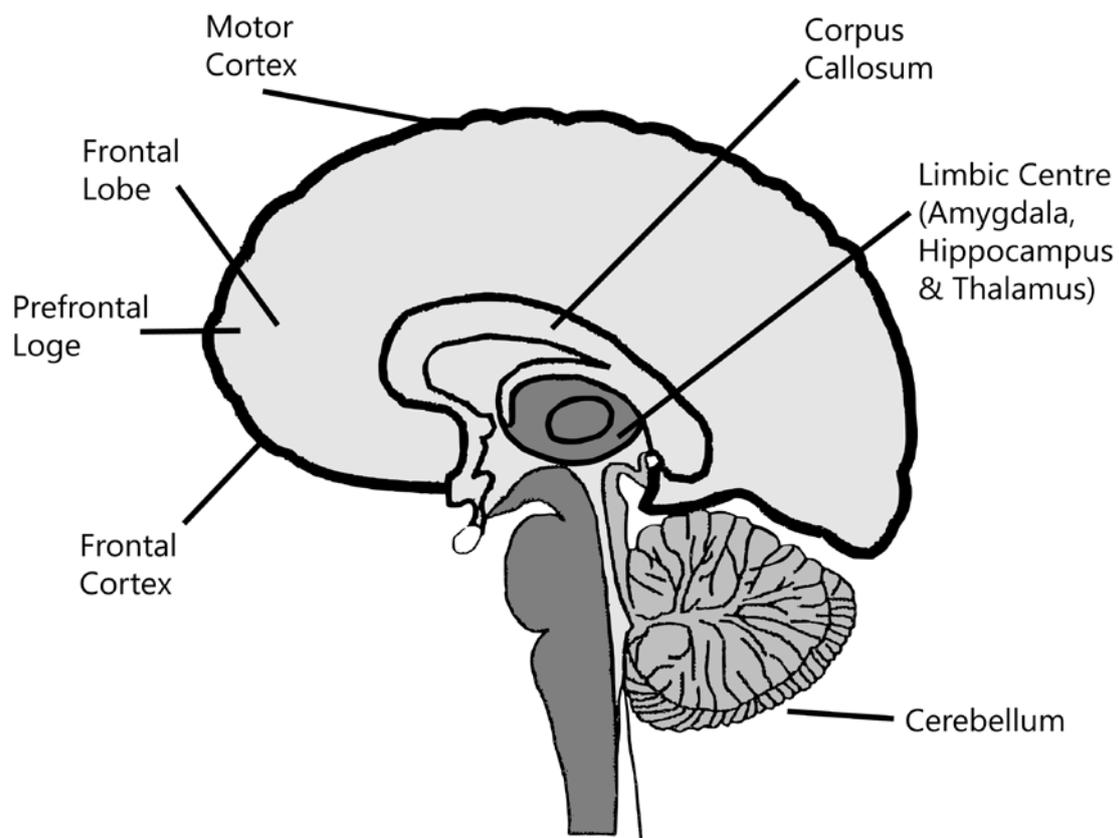
Some ADD children will demonstrate speech difficulties, such as a lisp or experiencing difficulty when pronouncing some words. More extreme cases could result in late talking. Speech therapy is an excellent aid as the child will grow more confident and will be able to communicate emotions and frustrations more clearly.

## **2.4 The brain and ADD**

The reticular activating system (RAS) is a network of nerve cells which starts at the back, lower part of the brain and moves through to the middle of the brain and lastly to the frontal parts of the brain. The RAS is responsible for regulating the activity levels of the brain and acts as a sieve. By sieving out less important stimuli, the RAS allows the brain to focus on what is more important. It is believed that sufferers of AD/HD have dysfunctional RAS that allows them to receive all stimuli at once, thus making it difficult to concentrate on a single stimulus. The RAS relies on three transmitters (which are frequently linked to ADD), namely dopamine, noradrenaline and serotonin, to function efficiently (Pooley, 2009:35).

The frontal areas: Specific scans of the frontal lobe (called Positron Emission Tomographs or PET) found that children suffering from ADD had a poorer blood circulation than children who do not suffer from ADD. The cortex, which is the outer layer of the frontal lobe, plays an important role in moderating impulses from the limbic centre; namely it prevents an impulse developing into an over-reaction. It is, therefore, possible that a child displaying ADD symptoms could have a cortex that is not working efficiently in controlling impulses. In addition to the impulse control, early motor activity stimulates the brain to develop neural pathways that work the most efficiently for nerve transmissions for the child. ADD children have been found to have an immature cortex that has restricted the formation of these essential neural pathways. This could account for ADD children who have poor motor skills (Pooley, 2009:35). Doctors Hartsough and Lambert found that ADD children are more likely to be delayed in crawling to the ratio of 6.5% versus 1.6%. Of children suffering from ADD, 52% are likely to have poor fine motor co-ordination versus the 35% of children who do not suffer from ADD but display poor fine motor co-ordination (Barkley, 2005:126).

More recently, the *Journal of Neuroscience* published the findings of Dr F. Xavier Costellanos and his colleagues from the National Institute of Mental Health in the United States of America. After comparing the brains of fifty-seven boys suffering from AD/HD and 55 boys not suffering from AD/HD, it was concluded that the AD/HD sufferers had symmetrical brains and that the other boys had asymmetrical brains as their right hemisphere was larger than their left hemisphere (Pooley, 2009:36).



**Figure 3: Diagram illustrating the various parts of the human brain discussed in this chapter. Adapted from Pooley (2009:34)**

The limbic centre is found in the middle of the brain at the corpus callosum, which is a collection of nerve fibres that join the two hemispheres of the brain together. The limbic centre is not one single part but rather a collection of regions, namely the hippocampus, the amygdala and thalamus regions. The limbic centre is responsible for primal needs and urges, such as hunger and sex, and for all basic emotions, such as happiness, anger, pleasure and sadness, to name but a few. Apart from

important emotions, the centre also co-ordinates muscle movement, observes environmental changes and controls reflex actions. For children suffering from ADD, it is considered highly plausible that their difficulty with controlling their moods and behaviour has to do with a malfunctioning limbic centre (Pooley, 2009:35).

Lastly, the cerebellum is the cauliflower-shaped part situated at the back of the brain responsible for co-ordinating most bodily actions. The cerebellum is responsible for the co-ordination of movement and also controls gross and fine co-ordination and muscle tone, co-ordinates incoming and outgoing stimuli and checks posture. Stimuli originate within the cerebellum, move to the mid-brain (limbic centre) and end at the frontal lobe and cortex.

Barkley (1997) notes that behavioural inhibition is the central impairment of ADD and that ADD is not purely an attention deficit, but rather a deficit in behavioural inhibition. Inhibition relates directly to four dominant neuropsychological abilities, namely:

- 1) The working memory: this includes foresight and hindsight and the ability to retain events in the mind and act according to the happenings of each event.
- 2) The internalization of speech: this ability relates to being able to describe and reflect on one's own behaviour, to question oneself, and to engage in moral reasoning.
- 3) Self-regulation of affect, arousal and motivation: this entails the ability to control one's emotions, and to engage in goal-orientated actions.
- 4) Reconstitution: this refers to the ability to receive information and to use it to reflect on one's own behaviour (Purdie et al., 2002:64).

## **2.5 Monitoring a child on medication**

Parents worry that should their ADD child start taking Ritalin then he or she could become addicted to taking medication and, in worst case scenarios, illegal drugs in the future. Substance abuse is more prevalent among adults and adolescents who suffer from ADD; however, there is no evidence proving that the use of Ritalin will develop into a substance abuse problem (Pooley, 2010).

Both parents and children should be made aware of which symptoms are being targeted for treatment. In terms of evaluating whether or not the correct dosage of medication has been prescribed, checklists and continuous performance tests (CPTs) should be kept, monitoring the child's behaviour. It is important to insist upon CPTs as these will measure the child's attention and while a larger dose of medication will improve the general behaviour, the ability to maintain attention will not improve and there will be more side effects. Medication does not "cure" ADD, but rather manages the symptoms. Approximately fifty percent of children will outgrow the disorder by their mid-teens. For those individuals who do not outgrow the disorder, the behaviours and hyperactivity do statistically improve with age (Greenberg et al., 1999).

In the 1990s the USA had 90% of the global percentage of children on stimulant medications such as methylphenidate (Ritalin) and dexamfetamine. In the last few years, the USA dropped to 80% of the global use, but according to Diller, this is only due to other countries advancing. In fact, in 2003 Canada had nearly entirely caught up with America. This concerns Diller (1996), who is now widely known as a critic of the inappropriate use of stimulant medications. One of his concerns is that the number of illegal stimulant medications ("speed" and "crack") has also increased with the surge of behaviour controlling stimulant medications (Marwick, 2003:67).

## **2.6 The benefits of appropriate diet for ADD**

There are still doctors who maintain that diet has no effect on behaviour. Barkley (2005) believes that sugar and other foods do not cause or trigger negative behaviours. However, neurological balance is essential for attitudes to life as

neurological health determines how one copes with anxiety, stress and other emotions (Pooley, 2010).

*The absence of persistent neurological deficits in the younger child, following control [by diet] of behaviour, and the greater incidence of persistent neurological deficits as the child grows older suggests that the offending chemicals operate slowly over a period of years to induce neurological damage. The degree of damage will vary from child to child, depending upon the genetic profile of the individual, and inherent toxicity of the compound, and the dosage (Feingold, 1982).*

In the 1960s, Feingold promoted a diet free of additives to calm children's behaviour. Picton suggests that parents avoid foods with synthetic colourants, flavourants and antioxidant preservatives (Sidley, 2008). The list of food options to avoid is daunting and also frustrating for parents and educators trying to control children's behaviour. According to Feingold's programme, the Hyperactive Children's Support Group in England compiled the following list of additives to be avoided (Picton, 2006:39):

**Table 3: Additives to be avoided in diet supporting the treatment of AD/HD (Picton, 2006:39):**

WHAT TO AVOID	NAME	FOUND IN THE FOLLOWING FOODS
Colourants (yellow)	Tartrazine	Sweets, desserts, soft drinks and canned vegetables
Colourants (red)	Carmoisine	Packet soup, confectionary and desserts
Colourants (blue)	Indigotin	Gravy mix, biscuits and sweets
Colourants (green)	Green S	Mint jelly, sweets, biscuits and canned

		vegetables
Flavourants	Monosodium Glutamate (MSG)	Sauces, soups and Chinese food
Flavourants	Monopotassium Glutamate (MPG)	Chips, crackers and other savoury snacks
Preservatives	Benzoic Acid	Pickles, yoghurt, fruit puree
Preservatives	Sulphur Dioxide	Dried fruit, fruit juice and fruit salad
Preservatives	Sodium Nitrate	Cheese products, processed meat and fish

Pooley (2010) suggests that to initiate a dietary intervention, for the first few weeks the listed foods below should be avoided and the behaviours monitored. After approximately six weeks one should notice calmer behaviour and the ability to quietly listen to someone or finish a task. Coordination and gross motor skills should improve and the general behaviour in the classroom should be less disruptive.

**Table 4: Foods to be avoided (Pooley, 2010)**

<b>Fruits</b>	<b>Vegetables</b>	<b>Miscellaneous</b>
Oranges; red and green apples; all berries; watermelon, grapes, apricots, peaches, plums, pineapples, mangoes.	Mealies, tomatoes, cucumbers, zucchini, courgettes, radishes, chillies and peppers.	Coffee, tea and almonds.

In 2007, the fact that food additives could contribute to the clinical diagnosis of ADD was emphasized even more than the significant finding that additives, such as synthetic colours which prevail in a diet, induce negative behavioural responses (McCann et al., 2007).

Pooley (2010) suggests that the following should be taken into consideration when dealing with a child suffering from AD/HD.

- The AD/HD child should eat complex carbohydrates and proteins frequently; including wholegrain cereals, vegetables, peanuts, peanut butter and fruits. AD/HD should have at least five small meals throughout the day: breakfast, midmorning snack, lunch, mid-afternoon snack and supper. Eating small amounts throughout the day will assist in maintaining blood sugar levels (discussed below) and stabilising energy and moods.
- Complex carbohydrates include wholegrain foods such as wholegrain breads, oats, muesli and brown rice.

A typical example of a child's daily eating plan should then resemble:

Breakfast: Eggs and wholewheat toast or oats. Not cereals with high sugar contents and not white toast.

Midmorning: Fruit. Not crisps, chocolate or biscuits.

Lunch: Wholewheat sandwiches with healthy fillings (peanut butter or salad). Not baked goods, crisps or sweets.

Mid-afternoon: Fruit or vegetable slices. These could be enjoyed with humus if the child likes humus. Not baked goods, chocolates or crisps.

Dinner: Meat/fish and vegetables. If served with rice, then brown rice. Not pasta, pizza or fast foods and pre-prepared meals as these contain additives and are generally exactly what needs to be avoided (Pauc, 2006: 144).

Doctors Millichap and Yee analysed seventy studies in the United States in 2011 and have suggested that a balanced diet that is high in fibre and Omega 3 would be most

effective for children suffering from ADD. They also reviewed diets prescribed for such children, including that of Dr Feingold, and concluded that the diets are very relevant, but possibly difficult to follow. They believe that dietary changes should be made to complement medical treatment (Millichap and Yee, 2011).

### **2.6.1 The benefits of essential fatty acids**

Thousands of children have benefitted from Feingold's diet, but later, at the request of several parents, the same Hyperactive Children's Support Group conducted a study to ascertain why hyperactive children reacted adversely to some food compounds when other children did not. Dr David Horrobin found that AD/HD children lacked the hormone-type chemical called Prostaglandin E1 (or simply PE1). This chemical was mentioned initially as a cause of AD/HD (Pauc, 2006:130).

Correcting the amount of the several prostaglandins in our body should be done ideally through our food sources, i.e. essential fatty acids. Essential fatty acids are found in Omega 3 and Omega 6 and are vital for good health but cannot be made in the body. Omega 3 and Omega 6 (polyunsaturated fats that are obtained through supplements and diet) are good for eyes, skin and joints; however, they are crucial for brain functioning and concentration. Symptoms indicating a deficiency in these fatty acids could include learning difficulties, poor short-term memory, weak concentration, recurrent infections, allergies and visual disturbances. Adults can display symptoms including dry eyes, thirst, raised blood pressure and cholesterol and inflammatory diseases such as arthritis (Pauc, 2006:130).

Essential fatty acids include arachidonic, linoleic and linolenic acids that forerun prostaglandins (as prostaglandins are compounds that are derived from fatty acids). Omega 3 has three subtypes: EPA (eicosapentaenoic acid which is found in oily fish), DHA (docosahexaenoic acid which is also found in oily fish) and ALA (alpha-linolenic acid which is found in dark green leafed vegetables like spinach and flaxseed oil). Linoleic acid (LA) is found in vegetables, nuts, grains and seeds (Pauc, 2006:135).

## **2.6.2 The role of blood sugar levels for ADD**

Taylor (2003) believes that any contribution made toward stabilizing the blood sugar of an AD/HD child is a beneficial one and will have an immediate and positive effect as the child will become calmer and more focused. Taylor suggests proteins plus complex carbohydrates for breakfast (previously it was debated that proteins should not be eaten with carbohydrates; this is, however, the most effective way to stabilize blood sugar levels), peanut butter or tuna sandwiches as snacks and the reduction of sugar intake as much as possible (Bester, 2006:133).

ADHASA (Attention-Deficit Hyperactivity Support Groups of Southern Africa) recommend the following supplements to benefit children suffering from AD/HD: Omega 3, Omega 6 and vitamins B6, Zinc and Magnesium (Pooley, 2009:45; Bester, 2006:133). Zinc supplements prove to be highly beneficial as they assist the regulation of the functioning of the neurotransmitter dopamine. Dopamine has been mentioned previously as one of the three neurotransmitters associated with AD/HD (Pauc, 2006:137).

## **2.7 Other diagnoses frequently associated with ADD**

ADD is often associated with other disorders and, in some cases, a child can experience an overlapping of disorders. Penn State University conducted a study, whereby data for 119 children were analysed and it was found that 70% of the children that were sufferers of ADD were also presenting another learning disability. Children who suffer from ADD and another learning disability would struggle more than a child with just a learning disability; however, a child suffering with a learning disability without ADD showed more attention problems than a child with ADD and no learning disability. The study noted that learning and attention problems are interrelated and usually coexist with each other (Mayes, Calhoun and Crowell, 2000).

### **2.7.1 Oppositional Defiant Disorder (ODD)**

Children diagnosed with ODD exhibit defiant and rebellious behaviours and tend to argue with parents and teachers as they will not acknowledge rules and requests.

They lose their tempers and blame others for their mistakes which can lead to anger and vengeful behaviours.

### 2.7.2 Gilles de la Tourette Syndrome

This is commonly known as Tourette's Syndrome. Tourette's manifests itself as a combination of ADD symptoms with additional compulsive behaviours and muscular spasms (tics). Tourette's has been more recently treated with Ritalin (see Table Two above). Tourette's Syndrome starts to manifest in a child between the ages of two and fifteen years old. A description of an eight year old boy demonstrating Tourette's Syndrome symptoms follows:

*Following the birth Roland had been taken to a special care unit due to concerns over respiratory distress. Following this initial hiccup, all milestones were achieved on time or indeed precociously, and all went well until about three years of age. Insidiously, Roland developed the habit of blinking for no apparent reason and over the next three years developed a marked **titubation** (a repetitive movement of the body – in this case nodding of the head and rocking to and fro). Gradually he started grimacing, repeatedly clearing his throat and exhibiting **echolalia** (repeating the last sentence heard) (Pauc, 2006:29).*

### 2.7.3 Learning Problems: Dyslexia

Learners diagnosed with ADD often display difficulty in reading, spelling and letter formation. Difficulties can also include delayed speech, poor coordination and stuttering. Ordinarily, a child will begin to use single words after the first year and should be saying short sentences by the third year. Any irregularities with regards to this development should be noticed by a paediatrician during developmental checkups. Stuttering is very common for young children as constructing a sentence takes place in the left side of the brain, whereas the language is a right brain activity. Of children with learning disabilities, 98% are predominant in right brain activities and will struggle to speak coherent sentences. It is also not uncommon for children to confuse their right and left sides with each other and this will affect their ability to

follow words when reading (Pauc, 2006:14). Of children suffering from ADD, 40% also suffer from dyslexia (Pauc, 2006:16).

#### **2.7.4 Conduct Disorder**

Conduct Disorder (CD) is a more serious behavioural disorder than Oppositional Defiant Disorder (ODD) as the child threatens and is aggressive with classmates, adults and pets (Bester, 2006:47).

#### **2.7.5 Emotional and Behavioural Disorders**

Children with disorders like ADD can demonstrate disruptive behaviours in the classroom. Emotional or behavioural disorders (EBD), which affect a child independently from disorders like ADD, can make him or her manifest the same disruptive behaviours and sometimes even more so than sufferers of ADD. There are three basic criteria when considering if a child is suffering from EBD, namely frequency, duration and the intensity of the behaviour. Regarding the frequency of behaviour, a child suffering from EBD could cry, sulk or fight decidedly more frequently than their peers. Likewise, relative to the age of the class, a child might throw a tantrum for over an hour instead of a few minutes. An angry child who threatens others when upset probably suffers from EBD (Heward, 2003:301).

#### **2.7.6 Asperger's Syndrome (AS)**

Tony Attwood (1998) maintains that one out of every six children suffering from AS will also be suffering from ADD. AS is an emotional/social disorder as the child does not understand that other people have feelings which can be hurt by things that he or she says and does. They tend to misinterpret social cues and due to this symptom, AS sufferers struggle to make friends. They also tend to grow obsessive about unusual subjects that interest them exclusively. Some AS children may demonstrate autistic symptoms, such as being unable to maintain eye contact, and some develop tics and other symptoms of Tourette's Syndrome (Pooley, 2010).

## **2.8 Teaching children who suffer from behavioural disorders**

Teaching children who suffer from ADD and other behavioural disorders can be challenging and frustrating, yet a successful experience can also be more rewarding than the same teaching of a child without a disorder. Educators who have an understanding of the various disorders will be better equipped for teaching such children as they will be more aware and sensitive to symptoms. To teach a child how to learn, especially one suffering from a disorder, educators should lead the class in brief activities with clear and short instructions (De l'Etoile, 2005:39).

# Chapter Three:

The relationship between Attention Deficit Disorders, creative behaviour and protocol followed by concerned teachers

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## 3.1 What is creativity?

As illustrated in the quotation below (Benefit, 2010) there is a continuous debate about the issues of behavioural problems and creative behaviour. Parents can choose not to medicate their children, claiming that they are “creative”.

*I frequently wonder how my creative personality type and ADD are connected because when you compare the traits of both, it's striking how similar they are. The main differences seem to be in the degree, frequency, and impact these "traits" have on our lives. Both ADD and the Creative Personality Types share many characteristics.*

One could consider creativity in terms of products created. Musically, creativity could be considered a performance, an improvisation or a composition or arrangement. It has been debated whether or not the thought processes during creating something, no matter the domain, are conscious (Hallam and Shaw, 2002:103). It has also been speculated that one may not be aware of one's thoughts while one is creating and that one is able, while being creative, to continue intuitively. Sloboda argued that there are two stages of creativity, namely the inspiration stage and the execution stage. The first stage depends on an unconscious process whereas the second would rely on conscious and cognitive work (Sloboda, 1985: 65).

Across all fields, a few common cognitive characteristics are found in creative individuals: relatively high intelligence, originality, verbal fluency, logical thinking skills, imagination, positive responses to novelty, ability to find order out of chaos, preference for creating new structures rather than making use of existing structures and using knowledge as a base for new ideas. In addition to these cognitive characteristics, one could conclude that the following personality characteristics,

largely related to commitment, motivation and methods of working, are found in creative individuals: curiosity, perseverance, willingness to take intellectual risks and to confront hostility, being task focused and a high degree of self-organization (Hallam, 1998). However, it is debatable whether or not the aforementioned points are substantiated traits of a creative individual as factors such as the individual's social and economic backgrounds and his or her upbringing would influence the developments of motivation and work ethic.

In 1983, Paul Torrance suggested that one could develop creativity by following a list of instructions.

### **How to grow up creatively gifted**

- Do not be afraid to “fall in love” with something and pursue it with intensity. (You will do best what you like to do most.)
- Know, understand, take pride in, practise, develop, use, exploit and enjoy your greatest strengths.
- Learn to free yourself from the expectations of others and to walk away from the games they try to impose on you.
- Free yourself to play your own game in such a way as to make good use of your gifts.
- Find a great teacher or mentor who will help you.
- Do not waste a lot of expensive, unproductive energy trying to be well-rounded. (Do not try to do everything; do what you can do well and what you love.)
- Learn the skills of interdependence. (Learn to depend on one another, giving freely of your greatest strengths and most intense loves.) (Torrance, 2002:72).

Hallam disagrees with the list proposed by Torrance as there would be concerns for society as a whole if each individual made use of such a list (Hallam, 1998:103). The

researcher has observed that many learners do not have excellent educators or mentors and many learners are never given the opportunity to discover their strengths due to lack of resources. Many learners are expected to perform multiple functional duties in their home lives and some are even expected to assist their families financially. In this way, many learners simply do not have the luxury of exploring their own creativity as their time is not spent being young, but rather they are experiencing levels of stress and insecurity which can manifest in their behaviour in the classroom. This is not to say that learners do not possess the cognitive characteristics that are often found in creative individuals.

While researching for this thesis, it was realized that several young learners are under immense stresses in their home lives and this can either diminish their creativity or propel it rapidly. Young children are also victims of abuse; physical, emotional, sexual and neglect. Each of these forms of abuse can result in a learner being unable to perform in the classroom. When struggling with a learner who is disruptive in class, one needs to intervene (or request that someone with higher authority intervenes) to ensure that there are no hidden causes to spontaneous behaviour. While all learners should be encouraged to express themselves creatively in the classroom, an individual should not deprive his or her peers of this same opportunity. Suspected abuse should be reported and correct protocol for teachers is available on the Western Cape Education Department Website (2012).

The authors of *The Social Foundations of Music Education* felt that the very word “creative” had lost all meaning as it was used to describe so many different things:

*Creativity and good music have at least two things in common: (1) Everyone is in favour of them, and, (2) there is little or no agreement about what they are. Virtually every issue of the many educational journals published each month carries at least one reference to the need for creative teaching, creative books, creative living, creative classroom atmosphere, and on and on. However, seldom do the writers and speechmakers who urge creativity state in behavioural terms what creativity is. In essence, what is often implied*

*is that teachers should be creative in teaching their students how to be creative – a nice but not very helpful suggestion (Abeles et al., 1984:148).*

J.P.Guilford described the traits of creativity as fluency, flexibility and originality. Researchers evaluate fluency through word and idea-association as fluency describes how people are able to easily make associations with words or ideas. Flexibility, often tested with the use of puzzles, describes the changing of procedures to solve a problem. Originality is the ability to think in unusual ways (Abeles et al., 1984:149).

### **3.2 Creativity in the curriculum**

Due to the global economic environment, creativity has become an innovative and resourceful economic survival skill (Seltzer and Bentley, 1999). Considering this, many countries reconstructed their education systems to maintain economic performance by assisting the overall achievement of education (Woods et al., 1997). To encompass creativity at pre-school and school level, many policies were instigated to nurture both student and educator creativity. In 1999, the National Advisory Committee on Creative and Cultural Education published the report entitled *All Our Futures* which coined the phrase “democratic creativity”, meaning the level of creativity of the ordinary person (NACCCE, 1999:9). The British National Curriculum described creative thinking skills as enabling pupils to generate and extend ideas, to suggest hypotheses, to apply imagination, and to look for alternative innovative outcomes” (National Curriculum Handbook for Primary and Secondary Teachers, 1999). Creative development is also considered in the UK as one of the six areas of learning for children aged between 3-6 years old (the Foundation Phase) (Craft, 2002). In South Africa, Thinking Schools are becoming more prominent as teachers are giving classes the tools to assess and use information. The use of mind maps in the classroom is becoming a key tool to successful learning for all children across the spectrum of creativity.

### 3.3 Differentiating between ADD behaviours and creative behaviours

Teachers working in creative fields are often not sufficiently prepared for teaching learners with special needs, which is especially concerning as Cramond has suggested that ADD behaviour is concurrent with creative behaviour (Haywood, 2005). Cramond (1996), Gallagher (1986) and Shaw (1993) have each researched the connections between ADD and creativity. Cramond discovered that the only difference between ADD and creative behaviour in the classroom was that of the perception of the teacher. The following Table 5 was adapted from Cramond (1993) to support her belief that individuals should not be cast aside and categorised as “just having ADD”:

**Table 5: ADD symptoms versus creativity symptoms**

<b>ADD symptom (negative perception)</b>	<b>Creativity symptom (positive perception)</b>
Excessive fidgeting, difficulty staying seated	High energy level, radiating vitality
Frequently shifting activities; being easily distracted	A broad range of interests and a low tolerance for boredom
Difficulty following directions, needing continual supervision	Freedom of spirit that rejects limits imposed by others
Daydreaming in class	Daydreaming in class
Difficulty organising work	Finding order in chaos
Often acting before thinking or considering consequences	Willing to take chances
Negative social interactions leading to solitary play	Unconventional, preferring solitary activities

Gallagher (1986) conducted three studies in which he showed how behavioural, cognitive, emotional and physical symptoms were associated with creativity and, to a large degree, also associated with ADD. He found that learners categorised as “creative” are more likely to demonstrate the emotional and physical excitability that is frequently associated with ADD. Shaw’s research (1993) suggested that learners diagnosed with ADD are more likely to share certain traits with creative individuals; however, this is not to say that each individual diagnosed with ADD will exhibit unusually creative traits and vice versa (Rubia and Smith, 2001; Shimabukuro et al., 1999).

### **3.4 ADD symptoms, creative behaviours and learning styles in the general classroom environment**

Educators categorize students who require special attention using a variety of terms – Learning Disabled (LD), Emotionally Disturbed (ED), Eligible for Special Education and Related Services (ESER) and so forth. Children so classified differ in the amount and type of attention they require from teachers. When one analyzes why these youngsters require more attention than their classmates, it becomes obvious that they do not learn in the same way. They have a different learning style (Klavas, 1993).

The symptoms associated with ADD can cause or exacerbate many problems socially, in the learning environment and emotionally. It was estimated in 1994 that five percent of school-going children are affected by ADD in America (Brand et al., 2002). Educators tend to expect that learners sit still, work on a given task until it is completed and pay attention in class. This is very difficult for learners suffering from ADD as they physically move around a lot and struggle to pay attention. Unfortunately, misunderstanding the situation, educators might punish or reprimand them for not behaving in the expected fashion. The child could develop a low self-esteem that is only compounded by lack of success with school work due to their inability to pay attention and complete tasks (CHADD, 1992). Learners suffering from ADD are more likely than other learners to experience a number of problems:

- Negligence
- Underachievement academically
- Inappropriate behaviours
- Drug abuse
- School failure; dropping out of school (National Institute of Mental Health [NIMH], 1997).

The aforementioned list is very concerning and spokespersons for children suffering from the disorder have suggested that these children would benefit from a Multimodal Treatment Plan (MTP) that includes educational planning, psychological counselling, medical management and monitoring of behaviour. Various manuscripts have been published by governments and private agencies, each contradicting the other, leaving educators overwhelmed and confused (CHADD, 1992).

The medical diagnosis of a disability is stated in the assumption that there is a general and widely accepted norm of behaviour with which everyone identifies. This accepted norm of behaviour in the classroom is vague; implicating learners who simply move around while in the classroom as speculated candidates of ADD. Due to the growing popularity of attempting to diagnose ADD, such children can experience their school environment becoming subordinate to medication (Christiansen, 1996).

As each child has his or her own style of learning, similar to a fingerprint, there cannot be a single way to educate learners, some of whom suffer from ADD, who differ in gender, achievement levels and cultural backgrounds. It has been found that, when a child's learning style is addressed and acknowledged, their previously poor academic records improve drastically (Brunner and Majewski, 1990; Caine and Norwood, 2000). When considering ADD children at a primary school level, researchers have found that, in order to concentrate, some children prefer low light over brightly lit classrooms; afternoon classes were more productive; children are influenced hugely by their parents; and a large number of children lacked

persistence and preferred shortened periods with small breaks between each (Aust, 1994:215).

### **3.4.1 Suggestions for managing children with ADD in the classroom**

A child's seating position in a classroom can have a significant impact on his or her behaviour. A child suffering from ADD should be kept away from other disruptive children as they could fuel each others' negative behaviours. It is suggested that an ADD child should be placed either alone or next to a very conscientious child, and as close to the educator as possible. In this way, the educator is able to keep a constant eye on the child and have regular contact with him or her.

Regarding the issue of homework, a practical solution to assist an ADD child is to appoint a study buddy who will write the child's homework down at the end of each day. If this solution is chosen then the parents of the ADD child should be contacted and the situation explained fully. If, as an educator, one does not want to shift responsibility from the ADD child, very strict routines need to be implemented and upheld. It is beneficial for the educator to be consistent with the child and to use clear and precise instructions. Longwinded explanations will confuse a child who struggles to concentrate (Bester, 2006:113).

### **3.4.2 ADD symptoms and creative behaviour in the Arts & Culture/music classroom**

Arts & Culture (and class music) lessons are scheduled periods where learners diagnosed with ADD can express themselves creatively within structured boundaries, placing the music teacher in a special and accountable position. It could occur that an ADD learner is considered a nuisance in the music classroom when the teacher should look for ways for these individuals to express themselves within the music curriculum (Cramond, 1993). Cramond also pointed out in 1995 that creativity is not confined to the arts but is also used by inventors, entrepreneurs and researchers, all of whom rely on new ideas. Jackson (2003) reported that the use of improvisation, group singing and movement is widely used in music therapy

sessions. Improvisation (with regards to drama, movement and performing) is highly creative and a task that many learners find daunting.

If a learner diagnosed with ADD continues to exhibit hyperactivity or impulsive behaviours during improvisation, Jackson suggests the use of a multi-sensory approach by the teacher. Cripe (1986) suggests the use of simple movement to a listening activity or adding basic instrument playing to a singing activity.

*It is in playing, and only in playing, that the individual child or adult is able to be creative and to use the whole personality, and it is only in being creative that the individual discovers the self (Winnicott, 1971).*

### **3.5 What protocol do teachers need to follow when their class is continuously interrupted by disruptive behaviour?**

*Attention Deficit Disorder is not a disease, it is a part of the spectrum of children's behaviour. The issue is to find the line where abnormality stops and normality begins ... and the line moves according to who is drawing it (Spencer et al., 1995).*

When one is continuously interrupted by a learner in the classroom, it is often difficult to determine what the correct procedure to follow would be to ensure that learners are not singled out and made to feel inadequate in front of their peers. However, if persistent disruptive behaviour continues, a teacher needs to intervene. There is a national guideline which the Western Cape Education Department has made readily available on their website and in hard copy if requested.

*The new approach to positive behavioural support represents a shift from a focus on deficit and control, towards a developmental and restorative approach. This will enable learners to progress towards responsibility, relationship building and a greater sense of well-being. This approach is also embodied in the South African Constitution, the South African Schools Act*

*and the specific outcomes of the National Curriculum Statement which give priority to the concept of responsibility (Volschenk, 2007: 2).*

### **3.5.1 Interventions**

In South Africa it appears to be common practice for educators to suggest that “naughty” children are put on stimulant medications, such as Ritalin. This is neither ethical nor morally acceptable as many children can demonstrate ADD behaviours due to emotional causes and not due to possible neurochemical problems. There are several possible treatments for ADD and some treatments or therapies do not include the use of stimulant medication.

Dr Matthi Theron is the director of Specialised Education Support Services in the Western Cape and he suggests that the steps below are followed when wanting to refer a child for support of any nature. Dr Theron encourages educators and parents to contact him (Bester, 2006:116).

- A child should first be referred to the school’s teaching support team after the class educator recognises problematic behaviour.
- A support programme should be implemented to assist the child. If no improvement is demonstrated, then the district support team can be called in to assist the school and the child.
- Should a child need more specialised help, the district team will be able to make suggestions to the director if a special school placement is required.
- At all times, the best interests of the child and parents are most important ([http://www.westerncape.gov.za/eng/gov\\_employees/9174](http://www.westerncape.gov.za/eng/gov_employees/9174)).

Much of the literature available regarding intervening when a learner is suspected to be suffering from ADD is conducted from medical and psychological perspectives, and not that of an educational perspective (Purdie et al., 2002). There are three categories of interventions documented in literature; namely pharmacological, behavioural, and educational (Pelham et al., 1998). It is also noted that within each

of these three categories, there are very varied reports of effectiveness and productivity.

### **3.5.1.1 Pharmacological interventions**

The most common form of intervention is that of medicating the child suffering with ADD. Swanson et al. (1993) published a review of reviews on the effects of stimulant medication on children with ADD. It was found that stimulants have an effect on attention, concentration, and motivation; however, there was not clear evidence proving that the medication enhanced academic performance or learning. In 1989 there was a fear that the use of stimulant medication would postpone the use of non-pharmacological interventions by acting as a crutch in the short term and potentially upsetting the individual's progress long term (Purdie et al., 2002). In 1991 it was demonstrated that medication does not "cure" ADD, that the positive effects are short term and the effects vary due to several factors; namely age, gender, weight, and so forth (Whalen and Henker, 1991). It must also be noted that the possible side effects of stimulant medication (such as dry mouth, weight loss, shakiness and appetite loss) are concerns that should be considered before intervening with medication (Klorman et al., 1990). It is very important for teachers and parents to be aware that, while 70%-80% of children suffering with ADD show improvements in their behaviour, the child will not be "normalized" through the use of medication (Pelham et al., 1998). The child will always be slightly different to his or her peers in the classroom.

### **3.5.1.2 Behavioural interventions**

Behavioural interventions are also referred to as behaviour therapy or behaviour management. This form of intervention involves respectively reinforcing and punishing to decrease problematic behaviours and increase favourable behaviours (Daminco and Armstrong, 1996). When reprimanding a child suffering from ADD, the consequences need to be executed immediately and need to be more powerful and tangible than when reprimanding another learner (Barkley, 1997).

Cognitive Behavioural Therapy (CBT) was evolved from seminar work that was presented by Meichenbaum and Goodman in 1971. While this was over thirty years

ago, the fundamental elements remain relevant to teaching today as children are taught to use self-talk, instruction and monitoring to develop self-control of their behavioural problems. It must be noted that the positive effects of CBT have only been tested in clinical environments and not in the general classroom (Poley, 1995).

Parents can also learn how to manage children with ADD. Parental involvement can increase the compliancy of the child suffering from ADD (Anastopolous et al., 1991). In 1993 it was documented that the families of ADD children are often dysfunctional in terms of possible maternal stress and depression, paternal alcohol abuse, and inappropriate parental discipline (Pelham and Lang, 1993). Even if, like many of the children used in the researcher's case studies, there were no signs of abuse or other dysfunctionality, parent involvement is essential to ADD children's progress.

### **3.5.1.3 Educational interventions**

Educational interventions are essential for the smooth running of every classroom. Such interventions involve reducing noise levels, seating learners appropriately in the classroom, providing breaks between tasks and structuring lessons formally versus informally. There have been few studies regarding educational interventions, but McMullen et al. (1994) propose several school-based interventions and services for children suffering from ADD. These include team approaches, family involvement, cooperative learning and peer tutoring. In 1997, DuPaul and Barkley documented that children with ADD might benefit from interventions, but to what extent was unclear. It was noted, however, that educational interventions improved the behaviours of ADD children but not necessarily their academic work.

### **3.5.2 Educational interventions at Rondebosch Boys' Preparatory and the surrounding schools**

The researcher interviewed Mrs Lynn Miller, who was actively involved in setting up a system for boys requiring remedial attention at Rondebosch Boys' Preparatory School. When teachers at this school are faced with continual disruptive behaviour from a student, they are afforded the opportunity to request that the head of discipline intervenes. If this person feels that the learner is suffering from a behavioural disorder or is acting out as a reaction to something at home (be it

financial strain, a divorce or neglect, for example), the school's head of pastoral care will be called in. This position is filled by a teacher who will have an informal chat with the learner to try to ascertain if there are, in fact, personal issues contributing to the behaviour displayed in the classroom. If there is anything that alarms this teacher, the psychologist will be called in to see the learner. Once this meeting has taken place, an EST (Educator Support Team) meeting will take place; this meeting will include the head of academics, the head of pastoral care, the class teacher, the psychologist and the parents. Information regarding the EST is available in addenda B, C and D. The purpose of these meetings is to inform the parents, from each aspect of the school environment, how their son's behaviour is unacceptable and what steps could be taken in the future to rectify the problems and assist the boy. Parents are then free to decide whether or not they would like their son to see the school psychologist or a private educational psychologist, who will complete the national regulated forms which are attached in the addendum. Only doctors are allowed to prescribe medications, supplements and diet advice; teachers are urged not to do so to avoid any legal ramifications (Miller, personal interview: 2010).

Mr Christopher Verster was an educator at Wynberg Boys' Junior, another boys' school in the surrounding area. This school works on a system whereby students "receive order" forms for bad behaviour. A number of order forms can be given for a single misdemeanour and ten order forms result in Friday afternoon detention. The third detention is held on a Saturday and the second Saturday detention results in a hearing with the governing body. The remedial teacher and psychologist are called in when such behaviour persists and detention becomes a part of the student's extramural activities (Verster, personal interview: 2010).

Bishops Preparatory (formally referred to as Diocesan College) has a very firm Anglican tradition in their school and they enforce very clear codes of conduct. Upon applying for Bishops, each boy needs to write an entrance examination so that the school can ascertain his academic level and the amount of learner support he might require. The school offers two counsellors, a remedial teacher, five consulting educational psychologists, psychologists and psychiatrists. When work is continuously not completed and a child disrupts a class, the school's discipline

consists of detention, demerits and, the aforementioned failing to correct the individual's behaviour, a disciplinary committee. The school makes use of "daily detention" and Saturday detention for more serious consequences.

SACS Junior offers a school psychologist to address any psychological, emotional and social needs that any boy might have. A variety of psychological services are available to the boys, including play therapy, group work, assessment and supportive counselling. Regarding academic support, remedial teachers are available to assist any boy experiencing learning difficulties. The school requests that a certain order of channels of communication is respected by the parents. Their channels of communication include, in order: Parents and boys, class/subject teacher, head of grade, head of phase, head of discipline or school counsellor, deputy headmasters, and lastly the headmaster. Likewise, if a teacher is not receiving positive feedback from a child after detention, behavioural problems will be referred via the grade head to the head of discipline and the school counsellor for intervention. SACS's interventions involve discussing what measures could be taken to assist the boy and what could be causing the behavioural issues. This discussion is between the counsellor and the parents. Possible measures to manage negative behaviour include being put on a daily report card, suspension from all sport practices, Headmaster's detention, and community service. If there is a need for an intervention, the school recommends that the boy attends regular sessions with the school counsellor.

Upon gathering information and policies from the various schools, it was discovered that SACS Junior also offers the Children of Divorce Intervention Programme (CODIP). This appears to be unique and, while most schools cannot afford such a programme, an excellent idea. The objectives of the programme are to foster a supportive environment, to increase boys' accurate understanding of family changes after divorce, social problem solving and teaching of interpersonal skills.

In contrast to the boys only schools, Wynberg Girls' Junior does not believe in detention. Girls are issued with "sanctions" for behavioural misconduct. Six sanctions result in a meeting with the vice headmistress and the parents are notified. Nine

sanctions result in a meeting with the headmistress, the girl in question, and her parents. At this stage, suspension will be discussed if there is no other logical explanation for misbehaviour.

Another very prosperous school in the area is Herschel Preparatory for Girls. This school is able to offer a multi-disciplinary Remedial Support Department which is run by a clinical remedial teacher. The department has employed a group of outside therapists who practise at the school on a part-time basis. This group includes a speech and language therapist, two physiotherapists, two occupational therapists, two facilitators and a school counsellor. Along with academic support, girls are taught study techniques, time management and organisation skills.

Oakhurst Primary, considered one of two of Rondebosch's "sister schools", follows a disciplinary order which will depend on the circumstances, severity of misdemeanour and the number of repeat misdemeanours. This order consists of: a reprimand, a warning, a time out, detention (Grades 4 to 7 only), behaviour modification programme, interview with headmistress, interview with headmistress and parents, suspension of privileges, headmistress's detention, daily report and behavioural contracts. The behaviour modification programme is similar to detention.

Parents and educators need to show an interest in children who are suffering from ADD and their schoolwork. Motivation from constant support systems will encourage them to work hard and succeed. If the child has achieved something in class, or is having a good day behaviourally, reward him or her. It should be noted that ADD sufferers are generally on a low sugar diet. Educators should try to find different rewards for their children: stickers, being sent on an errand or being allowed to read a book at the end of a class. Educators should also consider that ADD children tend to be more immature than other children and this is the case with boys even more than with girls. This could be problematic for ADD children if they find themselves without a friend in the classroom.

If a child needs additional support for learning difficulties, a detailed discussion needs to take place between the educator and parents to discuss remedial

education, occupational therapy, speech therapy and so on (Picton, 2005:115). Additional support is available at Rondebosch Boys' Preparatory School and information regarding referrals is attached in addendum E.

# Chapter Four:

## Individuals and the musical activities used in the case studies

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### 4.1 Sound and the brain

An old Chinese proverb says, “Music comes from the heart of the human being. When emotions are born, they are expressed by sounds and when sounds are born, they give birth to music.”

Sounds influence the electrical workings of the brain and brainwave frequency is measured in the unit hertz. Brainwaves change between emotions of anxiety and calmness whereas sounds do not alter the frequency of brainwaves. Sound rather has the ability to influence the amplitude of a brainwave on a specific bandwidth (Bester, 2006:136).

Frequency measures the cycles per second and amplitude is measured in microvolts. Based on the explanation found in J.N. Demos’s *Getting Started with Neurofeedback* (2005), brainwave names according to frequency ranges can be summarised as below (Bester, 2006:136):

**Table 6: Brainwave names and frequencies**

<b>BANDWIDTH NAME</b>	<b>FREQUENCY RANGE (Hz)</b>	<b>GENERAL DESCRIPTION OR CHARACTERISTICS</b>
Delta	1 to 4	Sleep, recovery, solving complex problems
Theta	4 to 8	Insight and creativity
Alpha	8 to 12	Calmness, meditation

Beta	13 to 21	Concentration, continued mental effort
SMR	12 to 15	Physical relaxation, mental alertness
High Beta	20 to 32	Intensity, anxiety
Gamma	38 to 42	Cognitive processing and learning

Music is processed in a different area of the brain than language and speech and therefore a child is able to absorb more information when it is presented together with music (Peterson et al., 2005:192). Michael Ullman, a professor of neuroscience, psychology, neurology and linguistics at Georgetown University, states that, *one set of brain structures underlies rules in both language and music, but also suggests, for the first time, that a different brain system underlies memorized information in both domains.* He follows on by saying, *Language and music both depend on two different brain systems, each for the same thing – rules in one case and arbitrary information in the other* (ScienceDaily 2007: September 27).

Parents who have children demonstrating ADD behaviour could question whether or not having background music could assist their children in studying, as the general belief is that music is calming. The obvious point is that it would depend entirely on the choice of music. Calming music, for example, could put the brain into the “Alpha brain state”, whereby the child is relaxed but can also recall information and the “Beta brain state” would be ideal for memorising information for tests and examinations.

Music that has a tempo of crotchet = 60-63 beats per minute can calm the brain. Processing the aforementioned information, it was decided that the musical activities that were to be performed at the end of each Arts & Culture class would have to vary in accordance with what was expected from the class as a whole for the required

work after the activity. It was estimated which brain state would be needed for each section of work.

## 4.2 Musical activity

*By training subjects to control voluntarily combinations of visceral<sup>8</sup>, neural and motor responses, it is possible to assess linkages between physiological responses and their relationship to human consciousness (Schwartz, 1975:314).*

There are five bandwidths that were focused on when conducting the case studies: Delta, Theta, Beta, SMR and High Beta. It was decided that, due to the ages of the boys being observed, the Alpha and Gamma bandwidths would be excluded from the activities. These brainwaves are difficult to reach alone. Each activity was incorporated into a thirty minute lesson once a week. The various activities used are described below. Please refer to Addendum G for lesson plans and a full description of each activity presented.

### 4.2.1 Musical activity to control behaviours before maths

The Delta bandwidth is when the brain is at its most relaxed and is able to recover, rest and solve complex problems without a haze of distractions. This is the slowest brainwave and is often accomplished when in a deep sleep. In order to accomplish this mental state, or one close to the Delta bandwidth, the boys were asked to quietly close their eyes where they were sitting (lying down resulted in giggling and much excitement). The track played was slow and meditative, the volume quite soft. The class was aware of the music and was encouraged to breathe in time to it. Instructions were given quietly and fluently. At the end of the lesson, the volume was turned down until inaudible and the class was dismissed.

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<sup>8</sup> Not intellectual: instinctive and unreasoning.

### **4.2.2 Musical activity to control behaviours before art and creative writing**

When one functions normally, one's heart rate averages around 86 beats per minute. When one falls asleep, the heart rate drops to anything below 72 beats per minute. Theta brainwaves are found when one is falling asleep and ideally when one awakes. Theta waves are associated with creativity and, in order to reach this state, the class needed to be as calm as possible. To start this activity, the music was of a moderately fast tempo, to adjust to the change in classroom climate. The music soon became slower until the class had relaxed into a very gentle and very slow piece of music. The boys were encouraged to breathe in time to the music and were left to do so for several minutes. For this activity, music was used starting at 80 beats per minute (a slower track can be used).

### **4.2.3 Musical activity to control behaviours before the writing of a test**

In order to solve problems and process information, the brain works on the Beta bandwidth. When the brain produces predominantly fast brainwaves (Beta), it is more aroused. Children are therefore more alert, focused and networks of neurons in the brain are engaged to fully process information. Beta waves can also result in High Beta waves that are common when experiencing anxiety or fear. The class was to first listen to music with a tempo of 60-80 beats per minute. This served as an exercise in relaxation as they were instructed to listen with their eyes closed. When the music was changed to an upbeat tempo (tracks up to a tempo of 100 beats per minute), the class was led through a series of simple movements, including moving their arms in circular motions and reaching for the ceiling in time to the music. This increased the heart rates of the boys and they were visibly more alert when the exercise was concluded.

#### **4.2.4 Musical activity to control behaviours before presenting prepared work**

*A major application of EEG<sup>9</sup> self-regulation has been in the area of attention deficit and hyperactivity disorders (ADD and ADHD). Lubar and Shouse (1976)<sup>10</sup> and Shouse and Lubar (1979)<sup>11</sup> first reported that application of an SMR feedback protocol similar to that used in studies of epilepsy resulted in significant behavioural and EEG improvement in boys with ADHD. These studies noted that SMR training primarily affected the motor components of the disorders (Serman, 1996:26).*

The sensory motor rhythm (SMR) bandwidth deals with physical relaxation and mental alertness. This brainwave links brain activity to body functions and has a frequency range similar to that of the Beta bandwidth. The chosen music was, therefore, slightly slower in tempo (80–90 beats per minute) and the movements were less drastic and more controlled. The class had to stand with their eyes closed in an open space. Breathing in time to the music, the class was led through simple movements, including the rolling of their shoulders, the lifting of their arms and the bending of their knees. Each movement was done in a controlled manner.

#### **4.2.5 Musical activity to control behaviour before science or project work**

When Beta brainwaves are high, one is able to write quickly and be alert, sociable and energetic. This bandwidth is called High Beta bandwidth. Synthetic Beta brainwaves can be induced by the taking of diet pills, drinking energy sports drinks or smoking a cigarette. The class was roused into this bandwidth by fast moving music and very energetic movements led by the teacher. The chosen music should be of a tempo reaching 120 and above. The class was led in a similar fashion to an aerobics class to maintain control and discipline. The movements included forward lunges

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<sup>9</sup> Electroencephalography (EEG) is the recording of electrical activity along the scalp.

<sup>10</sup> Lubar, J.E. and Shouse, M.N. 1976. EEG and behavioural changes in a hyperkinetic child concurrent with training of the sensorimotor rhythm (SMR): A preliminary report. *Biofeedback and Self-Regulation*, 3:293–306.

<sup>11</sup> Shouse, M.N. and Lubar, J.E. 1979. Operant conditioning of EEG rhythms and retain in the treatment of hyperkinesis. *Biofeedback and Self-Regulation*, 4:299-312.

with arm movement, side lunges and varying steps in time to the music. Once this was achieved in a sequence, the class attempted the steps in double time.

### **4.3 Structuring the case studies**

This study has been aimed at demonstrating that the use of musical activity can affect a student's brainwaves and therefore affect his or her behaviour. The aim was to use music excerpts at a stipulated tempo in Arts & Culture periods before specific following subjects on the school timetable. If these activities resulted in a noticeable difference in behaviours, then one could possibly substitute medication with musical activities for learners who are border line and parents are struggling with the decision of whether or not to put them on medication. The use of musical activities in the classroom, in conjunction with medication or not, will be beneficial to the class as a whole and not only to children suffering from ADD.

Permission was given to use the four grade four classes for the purpose of this study and each activity was conducted at the end of the weekly Arts & Culture lessons (please refer to addendum A). After each activity had been conducted, the children were observed in the following lesson to ascertain if their behaviour had improved, worsened or remained the same. At no point were the learners made aware that they were being observed and they were never approached or questioned. The Arts & Culture lesson plans that were used during this time are provided as addendum G. These lessons were condensed so that at least five minutes were available for the musical activity at the end of each lesson. The researcher emphasises that the musical activities could be conducted after any lesson, but this was the scheduled time that was allocated to her. It is also important to focus more on which lesson is following the activity rather than what precedes it.

### **4.4 Reviews of case studies**

When selecting the candidates in each class, permission was first given to access each child's "ed lab file". This portfolio contains all important information pertaining to each child, including letters from parents, evaluation results and records from therapists. Information regarding the ed lab files are provided in addendum F. A list

of possible candidates was made and each class educator was approached about these children. In some cases, additional names were added to the list as no evaluation had yet taken place but the educator felt that there should be. In other instances, names were removed from the list as the children were not disruptive in the classroom environment. Each candidate has been referred to as a letter for their own privacy. A table summarising each class's candidates has been provided for easy reference.

#### 4.4.1 Class A

There were seven candidates in Class A, of whom three were taking the stimulant medication, Ritalin.

**Table 7: Class A candidates**

	<b>Medication</b>	<b>Therapy/ Remedial support</b>	<b>Teacher intervention</b>
<b>Candidate A</b>	None	Light therapy	Suggested occupational therapy assessment and eye test. Both were done.
<b>Candidate B</b>	Ritalin	None	Suggested that child see a paediatrician, this was done and the candidate was put onto Ritalin.
<b>Candidate C</b>	None	Suggested, but none	School counsellor suggested further therapy and deputy headmaster intervention for behaviour.
<b>Candidate D</b>	None	Occupational therapy	Suggested auditory test which was done.
<b>Candidate E</b>	Ritalin	Speech therapy and occupational therapy	Suggested occupation therapy assessment that was done.
<b>Candidate F</b>	Initially Ritalin, then Biostrath only to return to Ritalin	Academic and reading support	Suggested remedial support and occupational assessment.
<b>Candidate G</b>	None	None	Meetings with parents regarding his lack of respect for boundaries with teachers.

**Candidate A:** In grade one (2006) this candidate was sent for an occupational therapy assessment and for an eye test due to missing out words when reading and writing, rocking on his chair, incorrect posture and tightly grasping his pencil. It was decided that he would go for light therapy which, due to strained family dynamics, only commenced in June 2007. The candidate went through grade two 'under the radar', but his inability to complete tasks in the classroom in grade three resulted in the commencement of remedial spelling and occupational therapy in term three. Therapies had been avoided until this stage due to finances.

**Candidate B:** This candidate has been on Ritalin since grade one but during grade three the class teacher requested that his mother consult their paediatrician as he was only able to work well until noon, whereafter his behaviour and work deteriorated alarmingly. The medication was not changed. In grade two the candidate was involved in an awkward infatuation with a female member of the staff and made several inappropriate comments to classmates. In grade three his aggression became a problem and it was discovered that he lashed out when he became frustrated and he did not take Ritalin over the weekends. He is now administered Ritalin on Sundays to ensure better behaviour and work on Mondays.

**Candidate C:** This child moved to Rondebosch in grade two from another school and in the second term started showing irregular behaviours. The candidate threw appalling tantrums and in one incident, locked himself in the bathroom. He was sent to the school counsellor after this occurrence. The same behaviour continued in grade three but has gradually grown far worse and he has been sent to the deputy headmaster's office twice this year for bad behaviour. He is currently not on any medication or receiving any therapy but his parents have been advised that he should.

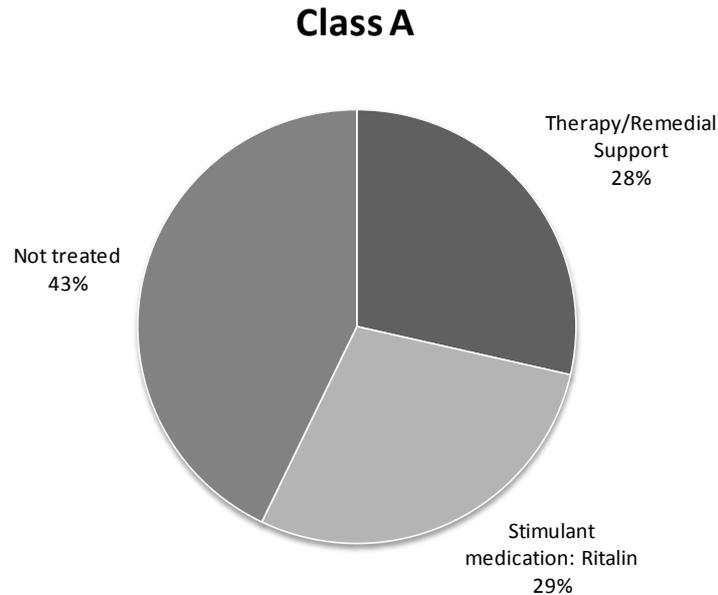
**Candidate D:** In grade one the candidate was sent for an occupational therapy assessment and was described by his class teacher as "nice naughty". In grade two his handwriting deteriorated rapidly and occupational therapy was once again advised to the parents. By grade three, his "class clown" reputation negatively affected his work and he was sent for an auditory test. In grade four his behaviour

has remained that of the entertainer and he tries to impress his peers more than completing his own work.

**Candidate E:** This learner has struggled with reading and maths from the beginning in grade one. He has always been a very outspoken child who appears to know no boundaries. He went for an occupational therapy assessment and commenced two speech therapy sessions per week in grade one. By March in his grade one year he had started Ritalin and commenced occupational therapy sessions. From there on the candidate has been able to work when he has been administered his medication but unfortunately this is not done strictly. He is a bright child but his entire attitude towards his work is altered when he has not received Ritalin.

**Candidate F:** This learner displayed the inability to concentrate in class in grade one and he was sent for a psychological assessment and commenced academic support during the second term of grade one. In June of his grade one year he was put on Ritalin which assisted his academic work but he still seemed dazed on occasion in class. In grade two it was noted that the learner rarely ate and there was concern that his blood sugars may be too low, resulting in his inability to concentrate. He also appeared to be a sullen and miserable child. He was taken off Ritalin and put on Biostrath (a homeopathic alternative to Ritalin) which can take up to three months to take effect. Unfortunately, at the start of grade three it was noted that this candidate was two years behind his chronological age in reading, spelling and comprehension. He immediately commenced two sessions per week in reading and academic support. He was also put back on to Ritalin which has remained a constant issue as the mother does not agree with this medication and often does not administer it. He is struggling in grade four and often cannot read the questions in tests and worksheets which is causing great concern for all concerned.

**Candidate G:** This learner is not, nor has ever been, on any behaviour altering medication. He is described as “artistic”, is often disruptive and has a lack of respect for boundaries. His work is very good but he often gets sidetracked which is concerning his family and teachers.



**Figure 4: Diagram illustrating the percentage of boys in Class A who receive therapy or medication for behavioural issues**

#### 4.4.2 Class B

There were ten candidates in Class B, of whom one was taking the stimulant medication, Ritalin.

**Table 8: Class B candidates**

	<b>Medication</b>	<b>Therapy/ Remedial Support</b>	<b>Teacher intervention</b>
<b>Candidate A</b>	None	Physiotherapy, academic support	Suggested full education assessment and attention assessment with paediatrician.
<b>Candidate B</b>	None	Occupational therapy and speech therapy	Suggested assessments with occupational and speech therapists.
<b>Candidate C</b>	Ritalin	Academic and remedial support	Suggested educational assessment that was done and the candidate put onto Ritalin.

<b>Candidate D</b>	None	None	Suggested occupational therapist assessment; has yet to be done.
<b>Candidate E</b>	None	Occupational therapy	Occupational assessment that was done.
<b>Candidate F</b>	None	None	Various therapy assessments and counselling have been suggested annually.
<b>Candidate G</b>	None	Auditory processing therapy	Suggested speech therapy assessment that was done.
<b>Candidate H</b>	None	Play therapy	Full educational assessment was suggested and completed.
<b>Candidate I</b>	None	Play and occupational therapies	Suggested occupational therapy assessment and eye test were done.
<b>Candidate J</b>	None	Play and occupational therapies	Suggested occupational therapy assessment that was done.

**Candidate A:** This candidate commenced physiotherapy in grade one for his posture but this had little effect and his progress remained very slow and erratic. Possibly due to his own frustrations, he became very rude and disruptive in class and was seated alone. In grade two he commenced two academic support sessions per week for his poor maths, although it was noted that he was struggling with reading and writing, too. In grade three the candidate started reading academic support and continued with his maths academic support sessions. It was decided in September of this year that he should be sent for a full educational assessment due to his very weak work and his attitude towards it. This year, his grade four year, he has recently been asked to go for an attention assessment with the family's paediatrician.

**Candidate B:** In February of his grade one year this candidate commenced occupational therapy for his very poor gross and fine motor development. By October of this year, the class teacher was convinced that the learner would have to repeat the year as he was not coping with the activities and work. To avoid this, the parents sent him to occupational therapy throughout holidays to ensure that he was up to date with work. He passed in grade two but it is noted that little improvement

was displayed in his work. In February of his grade two year he commenced remedial sessions due to his standard of work not being on par with the grade or his chronological age. In June of the same year he was sent for a speech therapy assessment for his articulation and commenced speech therapy immediately. In grade three, the various therapies were slowly stopped and more emphasis was put on supporting and helping the child at home. He is currently struggling in grade four and is very immature, disrupting the class often.

**Candidate C:** This learner moved from a specialized school in the third term of his grade one year. In the second term of grade two he commenced three academic support sessions per week and his mother tested his phonics daily. In August of grade two it was noted that the learner was very weak in reading and was only managing to complete a third of the assigned maths work. Apart from the three private academic support sessions each week, the child also joined a remedial maths group that met twice per week. In June of his grade three year, after an educational psychological assessment, the candidate was medicated with Ritalin. The medication has proved to be very beneficial and progress was noted in both reading and maths although remedial sessions have continued into his grade four year.

**Candidate D:** This little boy is hard working but produces untidy work and is always untidy himself. He was asked to be assessed by an occupational therapist in grade one and the mother opted to practise various exercises with him daily. In grade three and four it is noted that he is unable to listen and follow instructions, resulting in messy and rushed work, incorrectly executed.

**Candidate E:** Due to problematic fine motor skills, this little boy was assessed and commenced occupation therapy in grade one. This proved to be beneficial but teachers are still concerned that he is very talkative in class and therefore does not focus on his work properly.

**Candidate F:** This candidate has a very unfortunate family environment and has suffered because of it. Each year teachers have recommended and requested

therapy assessments and counselling but nothing has come of it to date. The learner is very impressionable and tends to get involved with children who have a negative influence on him and his work. It was noted that he definitely has attention issues and an educational evaluation should also take place.

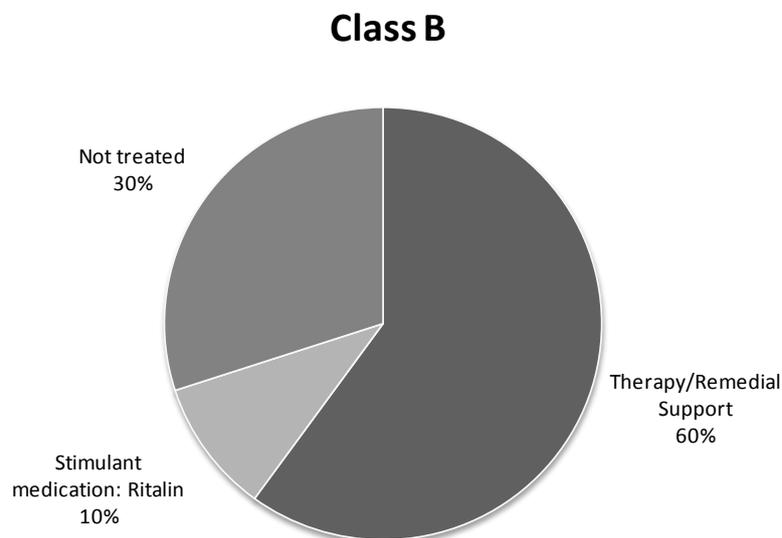
**Candidate G:** In grade one this learner commenced auditory processing therapy with the school speech therapist. He was inattentive and did not participate in group work. His work improved during his second year but his concentration has remained a problem to date.

**Candidate H:** This little boy is very bright and witty; unfortunately from an early age he demonstrated signs of attention deficit which affected his work and behaviour in the grade one classroom. There was a very unfortunate incident in November of his grade one year, where the child was caught stealing money and purchasing sweets from the school tuck shop. This incident was one of many displaying his erratic behaviour at school and he was immediately placed into three sessions of play therapy each week. In grade two and three it was noted that the child bullied other children in the playground and that he would assume a vacant stare when reprimanded by teachers. In May of his grade three year it was strongly advised that the learner was sent for a full educational evaluation as teachers were concerned that he was suffering from ADD. The mother was very against medicating her son and only in April this year did the child go for a full evaluation. The grade four teacher is concerned that his academic work is very weak.

**Candidate I:** Although a very diligent worker, this candidate was unfortunately very immature for his grade one year and was never capable of completing tasks in a given time. In October of his first year he was sent for an occupational therapy assessment after much coaxing from the class teacher. The learner was very young for his grade and started displaying signs of ADD. In grade three the learner was sent for an eye test and was also sent to an Ear, Nose and Throat specialist. It was discovered that extra skin was growing on the fine bones in the inner ear and an operation and medication were necessary. This, however, did not solve all behavioural issues and in September play therapy and occupational therapy

commenced. The learner has demonstrated a very negative attitude in class and shows very little respect to the teacher in charge. His family dynamic worsened at the end of his grade three year and he has proven emotionally unstable since then.

**Candidate J:** This candidate commenced play therapy in grade one as he was very disruptive on occasion and very well behaved on others. He was a very high achieving academic student and this has remained the case to date. He commenced occupational therapy this year and is concerning his family as he has no friends. His behaviour in the playground illustrates that, while quiet in class, he can be rude and bossy to his peers.



**Figure 5: Diagram illustrating the percentage of boys in Class B who receive therapy or medication for behavioural issues**

#### 4.4.3 Class C

There were six candidates in Class C, of whom two were taking stimulant medication; namely Ritalin and Concerta.

**Table 9: Class C candidates**

	<b>Medication</b>	<b>Therapy/ Remedial Support</b>	<b>Teacher intervention</b>
<b>Candidate A</b>	None	Academic support	Suggested speech therapy assessment and an auditory test were done.
<b>Candidate B</b>	Initially Eye-Q; moved to Ritalin and then to Concerta	Occupational therapy	Suggested occupational therapy assessment that was done.
<b>Candidate C</b>	None	Vision and light therapy	Meetings with teachers regarding his behaviour.
<b>Candidate D</b>	Eye-Q	Occupational therapy	Suggested occupational therapy assessment that was done.
<b>Candidate E</b>	Initially Ritalin; later Concerta	None	Suggested occupational therapy assessment that was done.
<b>Candidate F</b>	None	Occupational therapy	Academic assessments were requested by the teacher and contact has been made with the paediatrician since.

**Candidate A:** In grade one this candidate was sent for a speech therapy assessment and an auditory test. He commenced academic support for maths immediately although it is this subject that has remained an enormous problem ever since. He unfortunately makes himself more available to disrupting and entertaining the class than to maths. As he grows older, the family and teachers involved have noticed that instructions have to be repeated often.

**Candidate B:** In June of his grade one year, this candidate commenced occupational therapy and was administered Eye-Q (a natural supplement high in Omega oils) to assist his concentration. In August, his paediatrician put him on Ritalin which was only changed in June of his grade three year when he was moved to Concerta. He has a rushed attitude towards his academic work and is a very untidy, outspoken and disruptive child.

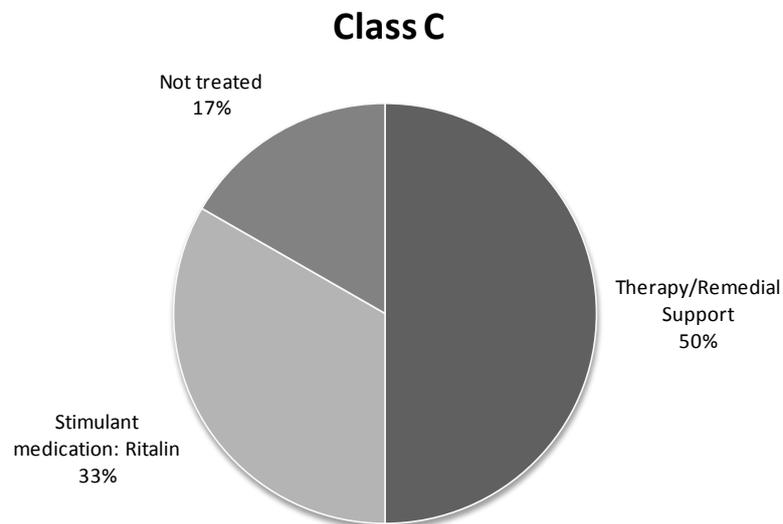
**Candidate C:** This learner is achieving pleasing results academically, but is unable to concentrate and often had to take work home to complete it in the foundation phase grades. He has been described as immature (he was born late in the year), distracting, disorganised and messy. He is unable to accept blame and acknowledge when he has made a mistake and insists upon blaming another peer. In May of his grade three year he commenced vision and light therapy (described in full in chapter two).

**Candidate D:** The candidate is a new learner from a different country. He was sent for an occupational therapy assessment in his grade three year due to his slow and untidy work and his poor organizational skills. This is the only candidate that experienced a difficult birth and other syndromes that are genetic. He has developed reasonably within the chronological timeframe. After the occupational therapy assessment, the candidate commenced occupation therapy, was administered Eye-Q and was sent for a vision test. In class he tends to be overbearing and outspoken although he clearly tries not to upset the teacher.

**Candidate E:** In grade one this learner was demonstrating very erratic behaviour and especially in his attitude towards his work. He was unable to complete tasks in class, was not progressing and was distracting other children. In June he was put on Ritalin against his parents' wishes and they took him off the medication in his grade two year. In grade three, however, the candidate was sent for a full scholastic evaluation due to his lack of concentration, erratic behaviour and slow progress. He was also sent for an occupational therapy assessment. The family's paediatrician put the child back on medication (Concerta) which drastically improved his work and concentration but negatively affected his mood and he became far more subdued.

**Candidate F:** This learner suffered from poor listening skills, limited vocabulary, spatial and fine motor coordination problems. He commenced occupational therapy but still demonstrated inappropriate behaviour in class. In grade two it was noted that his reading and spelling were very weak and this did not improve in his grade three year. His behaviour regressed and this year his class teacher intervened by requesting that his maths and English comprehension be assessed. These

assessments showed that he falls into the category considered as remedial for his comprehension and the other areas are very weak indeed. Further contact has been made with the family's paediatrician.



**Figure 6: Diagram illustrating the percentage of boys in Class C who receive therapy or medication for behavioural issues**

#### 4.4.4 Class D

There were ten candidates in Class D, of whom two were taking the stimulant medication, Ritalin, and one was taken off the medication without the school knowing.

**Table 10: Class D candidates**

	<b>Medication</b>	<b>Therapy/ Remedial Support</b>	<b>Teacher intervention</b>
<b>Candidate A</b>	Ritalin	Phototherapy	Suggested educational assessment that was done.
<b>Candidate B</b>	Biostrath	Light vision therapy	Suggested occupational therapy assessment and change in diet.

<b>Candidate C</b>	Initially Eye-Q, has since been put on Ritalin	Occupational therapy	Suggested diet change.
<b>Candidate D</b>	Ritalin; secretly had been taken off	Occupational therapy	Suggested that the child is put back on medication.
<b>Candidate E</b>	None	None	Active mother who regularly calls meetings.
<b>Candidate F</b>	None	None	Suggested meeting with educational psychologist that was held.
<b>Candidate G</b>	None	None	Seating arrangements in each classroom to avoid misbehaviour.
<b>Candidate H</b>	None	None	Supportive family has encouraged all suggestions by teachers.
<b>Candidate I</b>	None	Occupational and speech therapies	Suggested that occupational therapy continue; meeting currently continuing with parents.
<b>Candidate J</b>	None	Academic support and occupational therapy	Suggested full assessment: parents took candidate for full psychological assessment.

**Candidate A:** From grade one, there is a history of slow progress and daydreaming which was the cause of much frustration for the child and his family. In June of his grade two year, it was discovered that he has 1% peripheral vision which is very poor and he underwent a twelve week programme of “eye gym” and phototherapy. By November of his grade two year there had been some improvement but it was not notable and after consulting an educational psychologist, the child started taking Ritalin. He has remained a very shy and quiet learner in his grade three and four years.

**Candidate B:** In grade one, this candidate was on medication for an underdeveloped bladder which resulted in a reduction of stimulation of the involuntary muscles and exacerbation of behavioural traits. In April he went for an occupational therapy assessment due to his underdeveloped fine motor skills. In grade two it was noted that he was unable to concentrate for long periods of time

and was therefore often unable to complete given tasks. It was suggested to his parents that his diet was reviewed in relation to his sugar levels to increase his energy levels. He passed into grade three after a careful reward system was installed by his parents at home. In June of his grade three year, the candidate underwent Light Vision Therapy and started taking the natural medication Biostrath.

**Candidate C:** In grade one this candidate commenced occupational therapy sessions to assist his letter formation, concentration and fine motor skills. In grade two it was noted that he was unable to concentrate and, as a result, often distracted others in class. The parents were asked to check his diet and have his sugar levels tested. The possibility of Ritalin was discussed but he was placed on the natural Eye-Q for a period of time. In November of his grade two year, he was placed on Ritalin. He remained on Ritalin in grade three and made marked progress in his work although suffering from personal anguish over family dynamics.

**Candidate D:** In grade one this candidate commenced occupational therapy assessment due to underdeveloped fine motor skills. In grade three he was put on Ritalin but his mother was not pro this choice and often neglected to administer the medication. In March this year it was discovered that he had been taken off Ritalin and was very unhappy in physical education and maths classes. A meeting was held and the child has been put back onto medication along with other changes.

**Candidate E:** In grade two it was discovered that this candidate has a hearing impairment which can affect his work. He has an actively involved mother who regularly calls meetings with the class teachers about his friends.

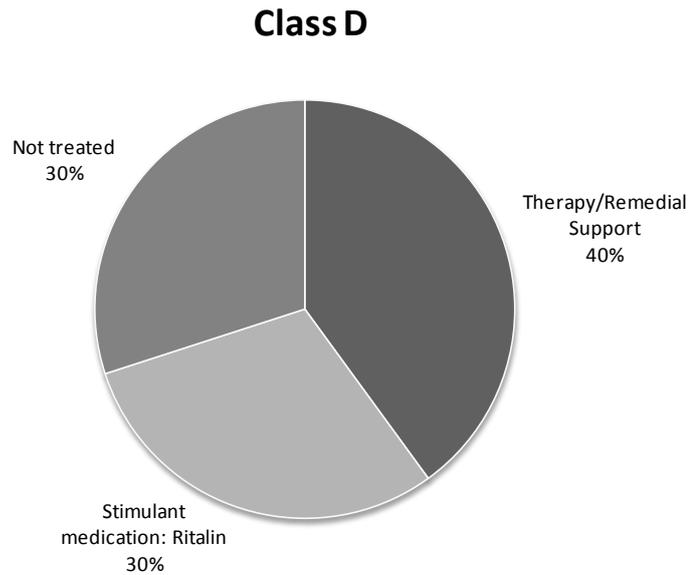
**Candidate F:** This candidate comes from a previously disadvantaged background and had problems regarding language as he was predominantly Xhosa speaking. In grade three it was noted that he had become easily distracted, had poor concentration and time management and a poor posture when working at his desk. His behaviour deteriorated further and he started showing a profound disrespect toward authority figures at school (monitors and teachers). He was taken to see an educational psychologist.

**Candidate G:** This candidate has a delicate family life and is raised by his mother. He tends to become anxious and tests his boundaries. It has been advised by previous teachers that this student sits alone and near the front of the classroom.

**Candidate H:** In grade one this learner was observed for letter formation but fortunately comes from a supportive home that supported this effort. He showed consistent progress and good behaviour in grades two and three. In grade four he started behaving out of character and in a more boisterous and distractive manner.

**Candidate I:** This candidate had an occupational therapy assessment and a speech therapy assessment in grade one. He commenced speech therapy sessions to improve his auditory perceptual skills and to correct his lisp. These sessions were stopped in October of his grade one year. He commenced occupational therapy sessions which his mother insisted were stopped at the end of grade two – against the advice of the class teacher.

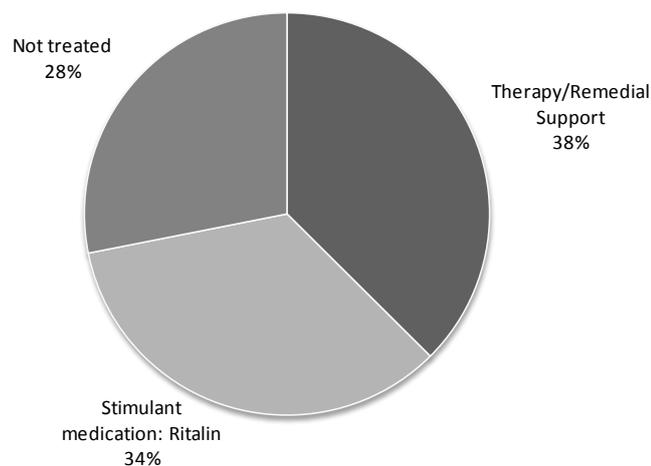
**Candidate J:** In grade one it was noted that this learner was making consistent progress in the below average group; he went for an occupational therapy assessment in the second term. In July of grade one he had developed a shoulder tic and excessive eye blinking which the class teacher suggested might result from the anxiety about his progress shown at home. He started academic support twice a week and went to see a clinical psychologist. In June of grade two the occupational therapy sessions were stopped as no new improvement was being made, and he continued with academic support and extra reading lessons. In grade three, he was sent for a full psychological assessment due to persistent tics he was developing. In grade four he began to illustrate disruptive behaviour and “attention seeking”.



**Figure 7: Diagram illustrating the percentage of boys in Class D who receive therapy or medication for behavioural issues**

There were 103 boys in the grade four year. Chapter 5 details how 32% of these boys were observed for the case studies and their reactions to various musical activities. The overall percentages of boys on medication and receiving therapy or remedial support are illustrated below.

**All observed boys for case studies**



**Figure 8: Diagram illustrating the percentage of overall observed boys who receive remedial support or medication**

## 4.5 Music and behaviour

Neurotherapy and sound therapy involve helping a learner to modify his or her brainwave activity to improve attention, reduce impulsivity, and to control hyperactive behaviours.

*Some people are able to change from one dominant brainwave pattern to another easily. The ability to be able to regulate brainwaves is advantageous for a number of reasons. For example, if you want to sleep but there is too much Beta brainwave activity in the brain, you will find it very difficult to fall asleep. Your thoughts keep going round and round and getting caught up in problems. It feels as if you just can't switch your thoughts off. When your dominant brainwave pattern is of brainwaves with an Alpha frequency, you are calmer and are able to move more easily to a dominant Theta brainwave state and then to the dominant Delta brainwave patterns (Bester, 2006:147).*

No boy knew that he was being observed during and after these activities and nor were they approached and asked about their behaviour or feelings regarding the new activities. Once the activity was performed, the children's behaviour was observed in the following class to ascertain whether or not their behaviour was positively or negatively affected. Educators, not only the class educator, filled out a questionnaire on each child's behaviour at the end of the following lesson. This behaviour was discussed with the class educator and it was ascertained whether or not the behaviour had worsened, improved or remained the same.

Conditions to be considered during this study included the time of day that each class had their lesson as each class differed. In addition to this, one class had their lesson on a Friday afternoon and the class would vary between an underlying pending weekend excitement to exhaustion. If there were disruptions during the day, such as a class outing, the activity was cancelled and moved to a more structured school day to insure a more accurate reflection of the boys' behaviours. Unexpectedly it was also found that the weather affected the boys' behaviour as rainy weather resulted in them having to stay indoors instead of running off excess energies at break time. This was an interesting aspect that had not been factored in

and the researcher had to focus the classes with prolonged breathing exercises to calm them down before commencing any of the activities.

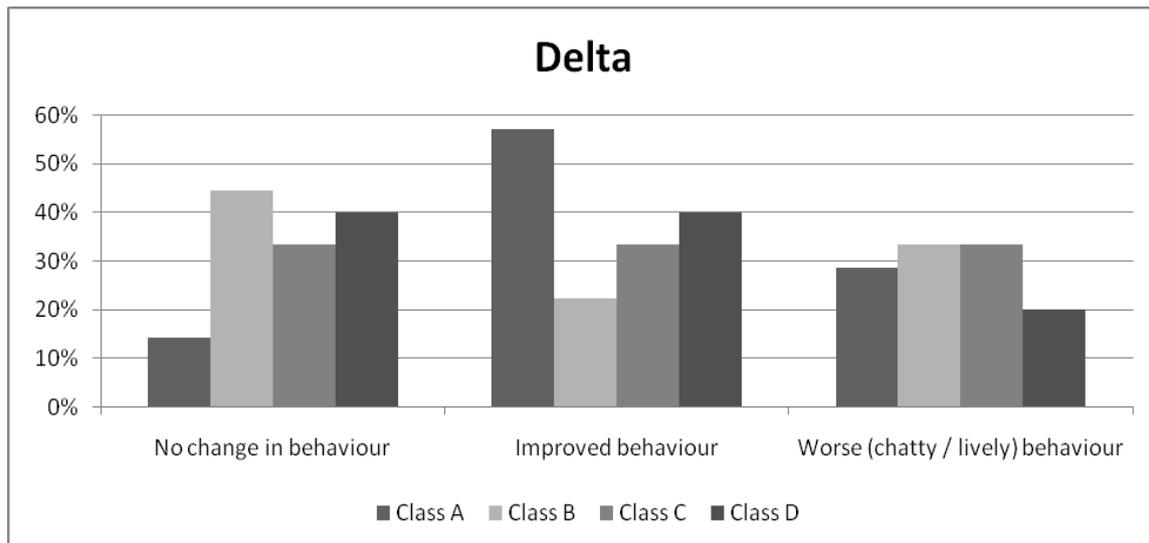
#### **4.5.1 Musical activity for maths**

As the Delta bandwidth is the most relaxed state that the brain can experience, it was a comfortable introduction to the various activities. It was obviously not possible to get each class to fall asleep, but they were guided through controlled breathing to very slow and steady music that encouraged a reduced heart rate and a general relaxed state which was as close to a sleep state as could be achieved.

The classes arose from this activity drowsy but soon became alert and eager to continue with the following lesson, which was mathematics. As this was the first time of doing such an activity, there was a general excitement in each class and it took a while for the boys to settle and completely cooperate in terms of breathing in time to the music and listening to the instructions that guided them through this activity.

It was also found that as the class continued throughout the activity, it helped for the instructions to be spoken more slowly and softly than the usual “teacher voice”. To bring the boys back to a normal state of mind, they were encouraged to get up at their leisure, within reason, and to reclaim their seats and prepare for the next lesson. As they were given more than one instruction, there was less talking than usual as they set out to complete each task.

Illustrated below, the results for the Delta bandwidth for the four classes.



**Figure 9: The Delta Bandwidth**

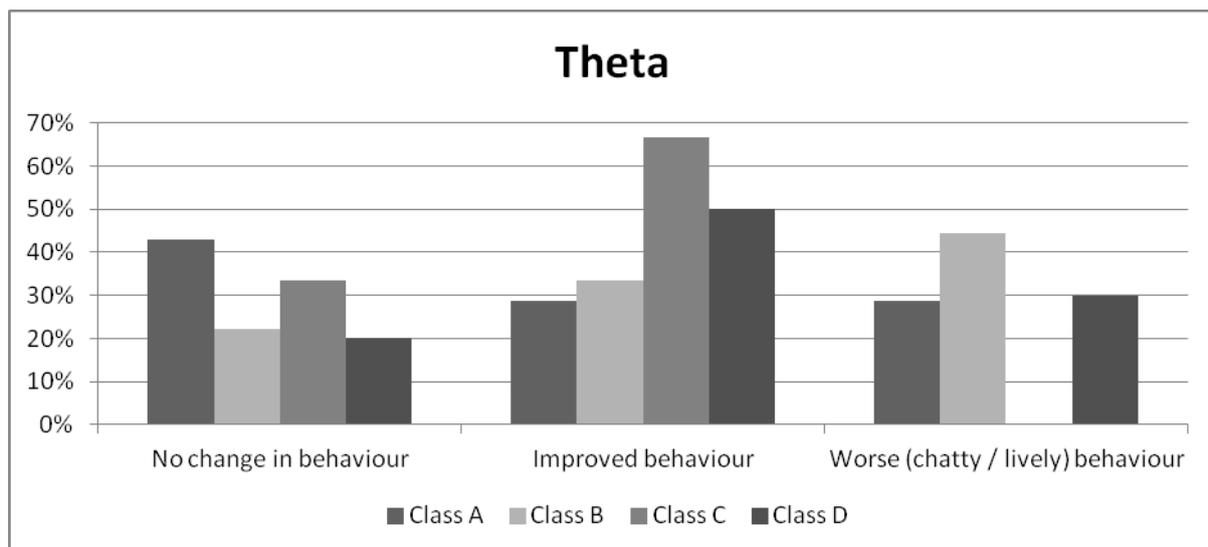
#### 4.5.2 Musical activity for art and creative writing

An individual functions at a heart rate of roughly 86 beats per minute. However, as they are about to fall asleep, their heart rate drops rapidly to 72 beats per minute as their bodies relax. Theta brainwaves are found at this extreme state of relaxation, when one is falling asleep and as one wakes up.

Getting the attention of a class of young boys, especially as they had now realised that each Arts & Culture lesson was ending with “cool movements”, proved to be difficult. In order to gain their attention, the exercise was started at a more upbeat speed that was quickly decreased to slower and more controlled movements. As the movements decreased in speed and rapidity, the music was changed to background music used in salons for aromatherapy massages. In one class, a small boy fell asleep during this exercise as they were encouraged to breathe in time to the music for several minutes. Softly spoken instructions were given to them as they focused on their breathing: “Inhale, hold, inhale more. Push your tummy out as you inhale a little more. Hold. Slowly exhale through your mouth. Hear your breath leaving your lungs. Feel your lungs get smaller as you let all the air out.”

The class was groggy when they were slowly asked to take their seats and prepare for the next creative lesson. The results were quite contrasting: some boys reacted excellently while others appeared to want to continue sleeping and grew irritable.

Illustrated below, the results for the Theta bandwidth for the four classes.



**Figure 10: The Theta Bandwidth**

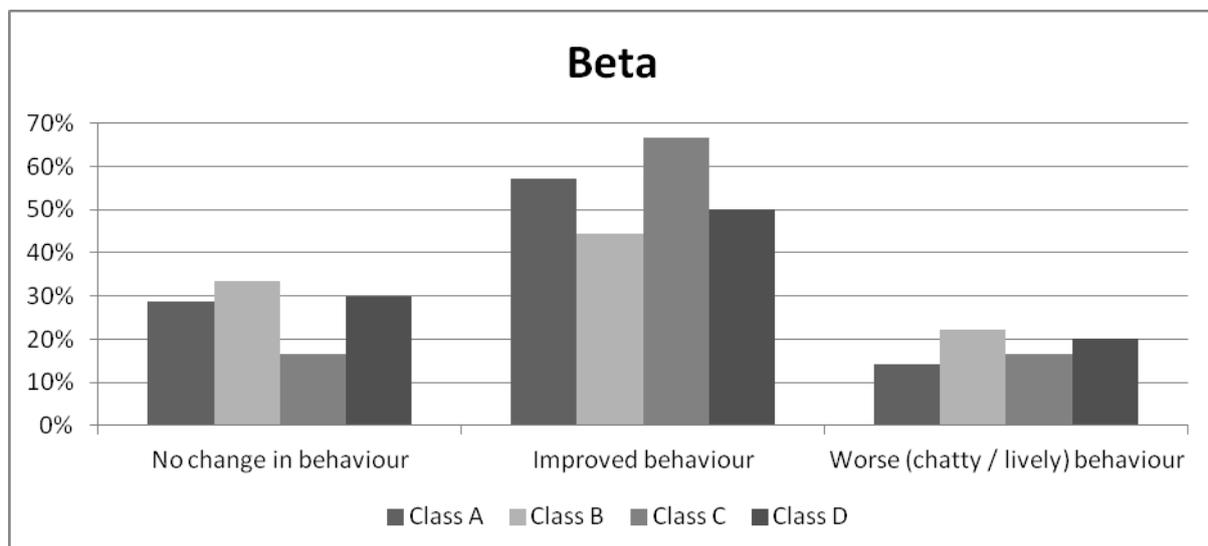
## 4.6 Musical activity for the writing of a test

When wanting to solve problems or process information, the brain works on the Beta bandwidth. When children are alert, they are functioning on the faster brainwaves which allow the brain to be fully engaged to complete tasks and process information.

To end off the lesson, the class was instructed to stand in a space that allowed them free movement of their arms. The activity was started with basic breathing exercises in time to music with a tempo of 60-80 beats per minute. Each boy was asked to close his eyes to ensure that no one was giggling or distracted. Movements were slowly introduced to the breathing exercises: lifting the shoulders with inhalation, dropping the shoulders with exhalation. Each movement was done slowly and in time; movements were not hurried or jerky.

The music was changed to an upbeat popular song (Poker Face by Lady Gaga) and the class grew very excited as they recognised the melody. The boys were led through basic aerobic exercises which including jumping, stretching and moving the body from side to side. The researcher was pleasantly surprised to observe that all boys appeared to thoroughly enjoy this exercise as they were able to exert themselves during school in time to music they listened to at home. Increased heart rates meant that each boy was more alert and ready to process and recollect information in this following period's test. This activity was very well received and achieved the most pleasing results in terms of the aim of the activities.

Illustrated below, the results of the Beta bandwidth for the four classes.



**Figure 11: The Beta Bandwidth**

## 4.7 Musical activity for oral presentations

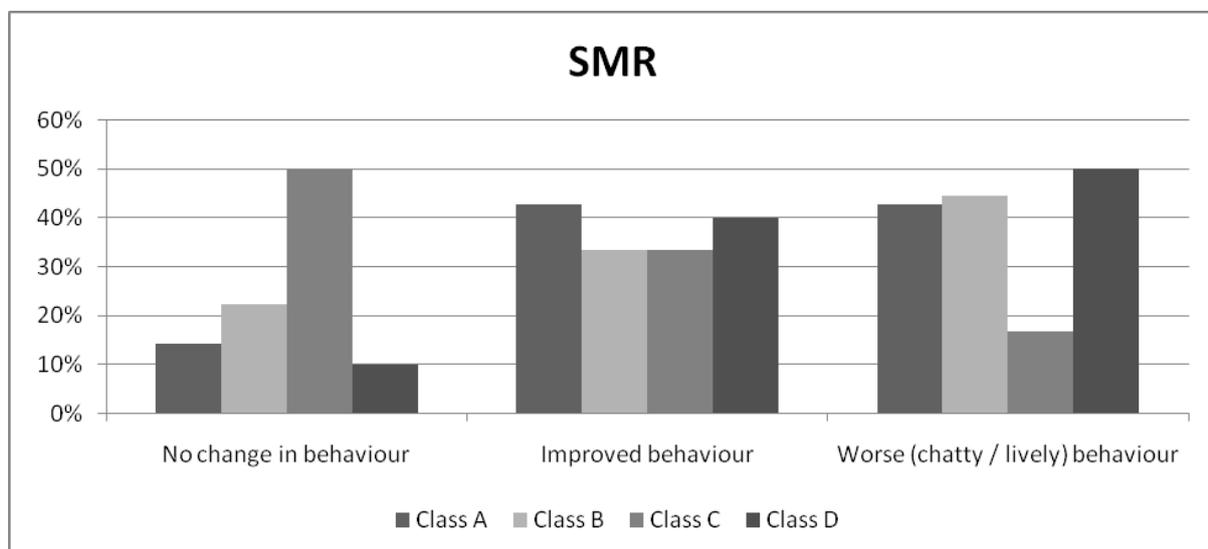
SMR (sensory motor rhythm) brainwaves are associated with relaxed and concentrated behaviours. This bandwidth links brain activity to body functions and has a frequency range similar to that of the Beta bandwidth. Low SMR brainwaves can cause a lack of focused attention and individuals with a lowered SMR brainwave activity can demonstrate behaviours associated with ADD. Therefore, it was

important to increase the class's SMR brainwave activity to increase attentiveness and alertness.

To achieve increased SMR brainwaves, a slower tempo was needed to accompany controlled movements. Once again, the activity was introduced with breathing exercises in a space that allowed for arm movement. The class was encouraged to keep their eyes closed as they were led through basic movements including the rolling of shoulders, the slow stretching of the neck and spinal extension (by placing one's chin on one's chest).

This activity was not well received by the classes as the music was at an in-between tempo, not fast enough to have something the boys would recognise as a beat and not slow enough to relax into. The boys spent a lot of time checking to see what other boys in the class were doing and they struggled to focus on the activity. The boys did, however, present very pleasing oral presentations after the activity.

Illustrated below are the results for the SMR bandwidth for the four classes.



**Figure 12: The SMR Bandwidth**

## 4.8 Musical activity for problem solving and the writing of a test

When children are functioning on High Beta brainwaves they are able to write quickly and are generally very energetic. Anxiety and fear are also associated with this brainwave, but, positively, also one's state of peak performance. When one worries and feels nervous, High Beta brainwaves are active. This activity was a success, as was the Beta brainwave activity, as the boys really enjoy jumping around and moving in time to music that they recognise. The class was led through the activity in the same fashion as the Beta brainwave activity. Once a basic sequence of aerobic movements was mastered (consisting of arm movements, side lunges and stepping in time to the music), the class attempted to do the same sequence in double time. The music was once again a popular song with a tempo of roughly 120-130 beats per minute (*The Final Countdown* by Joey Tempest). There was a lot of laughter and joyous movement during this activity. A morose group of boys had walked into the Arts & Culture lesson, tired and irritable after a long day at school, but a dramatic difference was observed after this activity.

Illustrated below are the results for the High Beta bandwidth for the four classes.

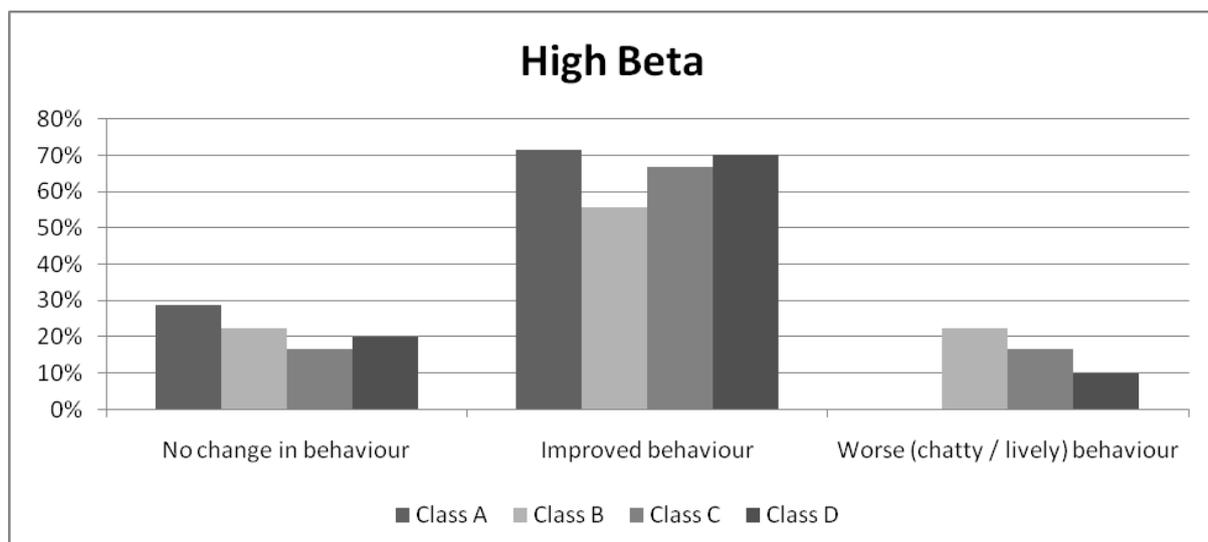


Figure 13: The High Beta Bandwidth

Each musical activity, while fun, proved to be an excellent relationship tool with each class as the boys were taken with the use of music that they could relate to. The classes were far more accepting of Arts & Culture lessons after these activities as they were made aware that learning about music was not restricted to classical music. I would strongly suggest this to any teacher who struggles with a specific class, as a tool to get them to work together as a class.

# Chapter Five:

## Summary, Conclusions and Recommendations

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### **5.1 Introduction**

Each class educator was approached and asked which boys demonstrated disruptive behaviours and, of these boys, who were on stimulant medications or receiving various therapies. The researcher was granted access to each boy's portfolio (called "ed lab files") and was able to go back through each boy's school career, detailing therapies, interventions and medications.

### **5.2 What is ADD and what are the various treatments available?**

The debate around ADD is controversial. In the second chapter, ADD is explained in terms of what causes the disorder and what various researchers believe and why. Chapter two also covers the concept of ADD being comorbid and describes the other disorders an ADD child can suffer from simultaneously.

The workings of the brain and neurological problems that give rise to disorders are explained. Five proposed predominant causes for ADD are discussed, namely an imbalance of neurotransmitters, lack of essential fatty acids, emotional reasons, iatrogenic, and foetal damage.

The controversial stimulant medication Ritalin is described and the side effects are discussed at length. The researcher compiled a summary of stimulant and non-stimulant medications currently available in South Africa. There are also several non-stimulant, natural products available for the treatment of behaviour disorders. These products (Eye Q and Biostrath) predominantly consist of Omega 3 and Omega 6. Correcting the amount of the several prostaglandins in one's body should be done ideally through the food sources, i.e. essential fatty acids.

### **5.3 The relationship between attention deficit disorders and creative behaviours**

It can be confusing for educators to determine the difference between spontaneous, creative behaviour (which is encouraged in music and Arts & Culture lessons) and disruptive behaviours that are associated with behavioural disorders. In chapter three the link between creativity and ADD is discussed. Acceptance of creativity in education suggests that there is room within the classroom environment for the students to be creative. Without curbing this creativity, one needs to maintain control over the classroom. Likewise, an educator needs to know the difference between creative behaviour and behaviours associated with ADD.

The researcher describes how learners suffering from ADD are more likely than other learners to demonstrate a number of problems; namely negligence, underachievement academically, inappropriate behaviour, drug abuse and dropping out of school. In contrast to the aforementioned list, positive perspectives of creative behaviours include high energy levels, a broad range of interests, a low tolerance for boredom, finding order in chaos, a willingness to take chances and unconventional behaviours.

### **5.4 Interventions**

While it is ideal to teach a class in a “developmental and restorative approach” (as specified by the Western Cape’s Education Department and quoted in chapter three), the reality is that some children will need to receive support and the educator will need to initiate an intervention. There are three kinds of interventions that were elaborated on in this thesis: pharmacological, behavioural and educational interventions.

- 1) Pharmacological interventions involve moderating a child’s behaviour with the use of stimulant medications such as Ritalin. While non-stimulant medications are available, it would appear that none are as effective as stimulant medications (Purdie et al., 2002).

- 2) Behavioural interventions include behavioural therapy and are used to reinforce punishments and decrease negative behaviours. When reprimanding a child suffering from ADD, the consequences need to be executed immediately and need to be more powerful and tangible than when reprimanding another learner (Barkley, 1997).
  
- 3) Educational interventions are essential for the smooth running of every classroom. These interventions involve reducing noise levels, seating learners appropriately in the classroom (as mentioned in chapter three), providing breaks between tasks and structuring lessons formally versus informally. Formal interventions require paperwork for legal purposes and the Rondebosch Boys' Preparatory School's intervention documentation is provided in the addenda. Educational interventions often improve the behaviour of a child suffering from ADD, but not the level of academic work. This said, the case studies that were conducted could be considered a form of educational intervention and they appeared to improve not only behaviour but some forms of academic work, too. For example, the boys showed improvement in their English oral presentations.

The researcher spoke to many of the schools surrounding Rondebosch Boys' Preparatory School and found what was the general protocol. There were similarities between the various schools, all of which are financially comfortable. All the boys-only schools in the area offer remedial support and other therapies. Speech and occupational therapists are available at all of the boys-only schools. Rondebosch Boys' make use of the EST (Educator Support Team) system, whereby meetings with the entire EST are held. The EST includes the class educator, the head of pastoral care, the head of academics, the headmaster, the psychologist and the parents. These meetings are not meant to intimidate parents, but rather evaluate all possibilities in order to find the most effective solution for behaviour disturbances. SACS Junior has further developed the Children of Divorce Intervention Programme (CODIP).

Each of these options is excellent for supporting educators. If such support is not available, which is the case for the majority of schools in the Western Cape, the researcher recommends that the school contacts Dr Matthi Theron who is the director of Specialised Education Support Services in the Western Cape. He suggests that the child should first be referred to an internal support team. At this meeting a support programme should be decided on and implemented immediately after. There are district teams available should a school feel that they cannot offer a child specialised help.

## **5.5 Musical activities used to control behaviours for specific lessons following Arts & Culture lessons**

The researcher explains that sounds influence the electrical workings of the brain and brainwave frequency is measured in the unit hertz. Brainwaves change between emotions of anxiety and calmness whereas sounds do not alter the frequency of brainwaves. Sound rather has the ability to influence the amplitude of a brainwave on a specific bandwidth (Bester, 2006:136). Due to this potential alteration, the researcher compiled lesson plans and musical activities that would best alter a child's behaviour for the specific following lesson.

## **5.6 The brainwaves summarised**

When the brain is most relaxed, Delta brainwaves are prevalent. During this state, the brain is able to solve complex problems and rest without distractions.

An individual's heart rate averages around 86 beats per minute when functioning normally. When falling asleep, the heart rate drops to anything below 72 beats per minute. Theta brainwaves are found when one is falling asleep and when one first wakes up.

Beta brainwaves are predominantly used when the brain is processing information. Beta brainwaves are faster than the others and are produced when the brain is aroused, resulting in a child being more alert and attentive to classwork.

When physically relaxed and mentally alert, the brain functions with SMR brainwaves. SMR stands for sensory motor rhythm. These brainwaves link the brain to bodily functions and have a similar frequency range to the Beta bandwidth.

High Beta brainwaves are ideal for an energetic and alert class, able to concentrate and write quickly. High Beta brainwaves are increased Beta brainwaves and can be synthetically created by taking diet medication or smoking tobacco cigarettes. However, it is far preferable, and especially in the case of pupils, that such effects not be synthetically created. Like the Beta activities, these activities were very well received by the classes.

## **5.7 The objective of the case studies**

The effects of music on the behaviour of learners diagnosed with Attention Deficit Disorder (ADD) have been investigated in various ways over the years and these have been described in this thesis. Research has shown that a repetitive beat produces a reduction in muscle tension and therefore reduces anxiety. Considering such research, the case studies observed the behaviours of learners who were considered problematic in the general classroom.

After researching the topic, the following was discovered regarding interventions in the Southern Suburbs for disruptive children:

- A child can become disruptive if he or she is struggling in a certain way. For example, if children cannot see properly, they could grow impatient and frustrated as they are unable to keep up with the class.
- A disruptive child is referred to an education support team after failed success with the class educator's discipline in the classroom and the need for additional support is made apparent.

- The education support team will have a meeting with the parents of the child in question and possible solutions for the behaviour will be discussed. Further referrals and assessments will follow this initial meeting.
- The child will go for an assessment (remedial, psychological or visual, depending on the needs of the child). Once this has been done, there will be substantial evidence to support future assistance. This could be in the form of remedial assistance, occupational therapy, speech therapy or medication.

## **5.8 Results of the case studies**

The case studies were conducted with the same four grade four classes over the time period of three terms at Rondebosch Boys' Preparatory School. The results below were ascertained by observing the behaviours of the children in the following lessons. Each percentage is an overall result for the three terms of case study for each class. The overall positive result is a combination of the four classes' positive results.

### **5.8.1 Delta bandwidth**

The delta activities resulted in a 38% improvement in behaviour. Class teachers had the following to say:

Teacher A: "The boys came back excited and seemingly enjoyed the activity. Behaviour was generally better and they were in far better moods!"

Teacher B: "Not much response from this activity but some boys' behaviour was worse than normal. Candidate C did not react well to this."

**Table 11: The Delta bandwidth: maths**

	<b>No response</b>	<b>Improved Behaviour</b>	<b>Worsened Behaviour</b>
<b>Class A</b>	15%	58%	27%
<b>Class B</b>	45%	20%	35%
<b>Class C</b>	30%	34%	36%
<b>Class D</b>	40%	40%	20%

### 5.8.2 Theta bandwidth

The Theta activities resulted in a 45% improvement in behaviour.

Teacher C commented: “This was very well received by candidate F. The behaviour was much improved after Arts & Culture. It did not last more than one period after your lesson, but there was 30 minutes of improved behaviour.”

**Table 12: The Theta bandwidth: creative writing, art and music**

	<b>No response</b>	<b>Improved Behaviour</b>	<b>Worsened Behaviour</b>
<b>Class A</b>	44%	28%	28%
<b>Class B</b>	20%	32%	48%
<b>Class C</b>	32%	68%	Nil
<b>Class D</b>	20%	50%	30%

### 5.8.3 Beta bandwidth

The Beta activities resulted in a 52% improvement in behaviour.

Teacher A: “Wow. Something to this one!”

Teacher B: “Behaviour much better. Really enjoyed the activity.”

Class teachers A, B and C commented that the behaviour change across the board was much improved after this activity. Children who were not observed also showed improved behaviours.

**Table 13: The Beta bandwidth: the writing of a test**

	<b>No response</b>	<b>Improved Behaviour</b>	<b>Worsened Behaviour</b>
<b>Class A</b>	29%	56%	15%
<b>Class B</b>	32%	45%	23%
<b>Class C</b>	18%	55%	27%
<b>Class D</b>	30%	50%	20%

### 5.8.4 SMR bandwidth

The SMR activities resulted in a 38% improvement in behaviour. This activity was not well received and the class teachers noted some instances of worsened behaviour:

Teacher D: “Candidates D and H impossible and they were not seated together.”

**Table 14: The SMR bandwidth: presenting prepared work**

	<b>No response</b>	<b>Improved Behaviour</b>	<b>Worsened Behaviour</b>
<b>Class A</b>	14%	43%	43%
<b>Class B</b>	22%	34%	44%
<b>Class C</b>	50%	34%	16%
<b>Class D</b>	10%	40%	50%

### 5.8.5 High Beta bandwidth

The High Beta activities resulted in a 66% improvement in behaviour.

Each class teacher commented on the excitement of the classes after this activity. The classes had returned to their classrooms and were very eager to explain the activity to their teachers. The teachers were pleased with the overall improvement in the behaviours of all boys in their classes, not only the specified boys.

Teacher A added: "The boys really had fun doing this one and wanted to tell me everything! Behaviour awesome in Maths. Focussed and generally a lot quieter."

**Table 15: The High Beta bandwidth: science or project work**

	<b>No response</b>	<b>Improved Behaviour</b>	<b>Worsened Behaviour</b>
<b>Class A</b>	28%	72%	Nil
<b>Class B</b>	20%	58%	22%

<b>Class C</b>	17%	65%	18%
<b>Class D</b>	20%	70%	10%

## 5.9 Conclusions and answering the research questions

The following conclusions can be drawn from the above results:

There was a definite improvement in behaviour after Beta and High Beta activities. The researcher concluded that while the other case studies were not as successful, this type of music could improve behaviours at home and in the general classroom environment on a regular basis.

After investigating the various medications available, the researcher recommends that parents faced with the decision of whether or not to place their child on stimulant medication should first consider dietary changes and supplement intake, exercise, non-stimulant medication and the use of music to aid studying or working on homework. This should enable them to observe the situation with their child at home, and any changes in behaviour, apart from the situation at school when they are not present.

The researcher initially questioned what information and knowledge would better equip South African music educators so that they could be more effective teachers in the Arts & Culture classroom, specifically in relation to teaching learners diagnosed with ADD. She found knowing what ADD is and what causes it highly beneficial as she was able to better understand learners in the classroom. This does not, however, imply that educators should label learners. Understanding that there is genuinely an Attention Deficit Disorder, educators are able to adjust their teaching to an inclusive approach. Understanding the medications that ADD learners take also gives insight into children who may display side effects.

The second research question asked whether or not musical activity could be used to benefit the learning potential in a classroom by means of helping to control

behavioural disorders. It was concluded that there were definite improvements in behaviour after musical activity, especially after Beta and High Beta activities. Even a small improvement in behaviour could benefit the entire class and the teaching experience.

### **5.10 Recommendations for further study**

There is speculation that there could be long term adverse effects to children taking Ritalin in terms of them developing a substance abuse problem (Hardy, 2000). This requires further investigation urgently.

Some doctors claim that diet does not affect the behaviours of children suffering from ADD. There is room yet to prove how various diets affect a child negatively and positively by stipulating meal plans (Bellisle, 2004).

The positive results in the Beta and High Beta activities leave space for further investigation as these results were very pleasing and could assist teaching, especially maths, in the classroom environment.

As some children develop cognitively at a slower rate than others, the researcher recommends that a method of learning to read music notes could be applied to reading words. In the case of remedial children (children who need learning assistance for literacy and numeracy), one could determine how the use of music could benefit the assisted learning. Furthermore, if a child is remedial and is able to read and play music, one could use music concepts and apply these to reading words and numbers.

### **5.11 Recommendations regarding implementation**

After researching this topic, the researcher would recommend that the following be considered for implementation in teacher training:

Education regarding behavioural disorders for all future educators, including music educators who may be trained within university music departments, and not

necessarily within faculties of education. This information would be highly beneficial to impending educators as they will be prepared with a better understanding of not only the children they will teach post graduation, but also of the side effects that children can experience when on various stimulant medications. As a first step the researcher intends contacting the applicable institutions within the Western Cape, informing them of the availability of her research. She also suggests making this research available to the surrounding schools that are in similar situations to the school that was used for the case studies. The musical activities could also prove to be beneficial to other schools.

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# Addendum A:

## Letter of permission

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### RONDEBOSCH BOYS' PREPARATORY SCHOOL

78 Campground Road Rondebosch 7700 Cape Town  
Tel 021-686 4635 Fax 021-685 1492  
E-mail: [info@rondebosch.com](mailto:info@rondebosch.com) <http://www.rondebosch.com>

February 2009

Dear Miss J Redfern

#### Permission to conduct Master's research during Grade Four Arts & Culture lessons

The Board of Governors and the headmaster have received your letter of request to conduct your research during the Grade Four Arts & Culture lessons this year. We are pleased to inform you that we will allow you to conduct this research. The Grade Four grade head, Mrs Deidre Leibrandt, will give you a list of names of all students currently on behaviour altering medications, such as Ritalin. We ask that you please use this information with the strictest of confidence; documents may be used, but please do censor names of the learners and their family members.

We wish you the best of luck and are happy to assist you further should you need it.

Yours sincerely,

**MR M A BECKMANN**

Deputy Headmaster

Head of Academics, Arts and Culture



# Addendum B:

EST letter to the parents

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Dear

Thank you for making the time to meet with the Educators Support Team (EST). The purpose of the EST is to offer a team approach to addressing difficulties your child may be experiencing at school.

Your appointment has been scheduled for Wednesday \_\_\_\_\_ at \_\_\_\_\_.

The meetings will take place upstairs in the Bosch Centre. Please be punctual for the meetings.

The multi-disciplinary team consists of 2 Remedial Therapists, an Occupational Therapist, Speech Therapist, Social Worker and the Class Teacher.

Please bring with you to the meeting any relevant previous assessments or medical reports regarding your son. Ideally, we would like both parents to attend the meeting.

We look forward to meeting with you and working together.

Yours sincerely

**EST Coordinator**

# Addendum C:

## EST 2012 Protocol

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The remedial staff, headmaster, counsellor, therapists and relevant teachers play a major role on the Educator Support Team.

This team presently meets on a Wednesday from 13:30 – 14:30 to discuss any referrals.

### **When an EST referral document needs to be completed:**

Any educator may request a meeting on a learner if they feel the learner is not achieving the desired learning outcomes and alternate teaching methods are not proving successful. *It remains the primary duty and responsibility of the educator to identify each learner's barriers to learning and development and to try and assist that learner with the support of the EST.* At this stage the RBPS (Rondebosch Boys' Preparatory School) EST is particularly involved in the academic side of the learner and the resultant problems as well as the emotional and social well being of the learner. The behavioural aspect, though still relevant when discussing academic progress, is dealt with by Mr Gillmer. Parents need to be informed by the educator about their son's barriers to learning and their consent obtained for an EST meeting to take place.

### **PROCEDURE:**

1. Request an EST form from the Remedial staff, also available on line 'reports' EST.
2. Fill in the form as comprehensively as possible consulting ALL relevant staff with whom the learner interacts.

3. Return the form to the remedial department.
4. The remedial staff will allocate a date and time and notify staff members in writing and the names will be displayed on the whiteboard so that anyone is free to add to the discussion. The parents will receive an invitation to attend the meeting.
5. The remedial staff will have the profile and relevant documentation available at the meeting. Staff to please have workbooks available.
6. The referring staff member will be asked to present the case followed by a discussion on the best way to manage the case and the formulation of an IEDP (individual education development plan).
7. Decisions will be made and entered on the EST form, a copy of which will be placed in the profile and the interview card filled in by the remedial staff.
8. Parents are notified of the outcome and suggestions of the team by either the educator or the remedial staff, should they not have attended the meeting.

If the problem involves more than the learner under-achieving it will be referred to a more formal meeting to be held in Mr Ryan's office with the parents present and minutes will be taken. Mr Ryan is briefed beforehand. The case may then be referred to the MFT (multi functional team) or to relevant professionals in the community.

It remains the duty of the remedial department and EST to suggest intervention by outside professionals. Lists will be supplied to parents where necessary and we ask that educators follow this procedure at all times.

Please keep the remedial staff informed of boys on medication when this is possible as well as boys receiving outside interventions/therapy.

Remedial Department

2012

# Addendum D:

EST information for teachers

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## **RONDEBOSCH BOYS' PREPARATORY SCHOOL**

### **EDUCATORS SUPPORT TEAM: INFORMATION FOR TEACHERS**

#### **1. AIM OF THE EST**

- Offer support and guidance to the Class Teacher, parents and pupil.
- Ensure there is documentation and records of interventions provided to the child.
- Ensure that there is effective carry over of information and intervention from one grade to another.
- To provide a collaborative approach to remediation.

#### **2. IMPORTANT INFORMATION TO ENSURE A WELL-FUNCTIONING EST**

- Content of all EST meetings is **confidential**.
- The EST is a multi-disciplinary team meeting, made up of the class teacher, remedial therapist, social worker, speech therapist, occupational therapist and parents.
- Never refer to or compare the child under discussion with any other child in the same class or in the school.

- In the EST, we do not make diagnoses or apportion labels. It is rather a multi-disciplinary forum to determine a direction and the necessary and pertinent intervention.
- Early intervention – in the child's life and in the school year, is very important. Please make referrals sooner rather than later.
- EST meetings take place on a Wednesday from 1:30 – 2:00pm and 2:00 – 2:30pm.
- 2 weeks notice may be needed for an EST appointment to be set up.
- Documentation of the child to be discussed, needs to be completed in as much detail as possible and available a week before the appointment.

### **3. WHAT SERVICES DOES THE EST OFFER?**

- Emotional Support
- Academic Support
- Occupational Therapy – primarily to the Foundation Phase
- Speech Therapy
- A multi-disciplinary Team Approach and referrals to outside specialists.
- Test Support.

## **REFERRAL PROCESS FOR GRADES 4 – 7**

Where there are general and unspecific concerns about a child, a referral to the EST is required. Please complete the EST referral form in as much detail as possible and then set up an EST appointment time with Shane Fish.

### **Speech Therapy**

Often these referrals come through Lynne Miller who has already screened the child. A report is sent to the parents with recommendations. The referral may then go straight to the Speech Therapist or to an EST if necessary.

### **Remedial Therapy**

The bottom 10 learners in each grade will be monitored and intervention will be put in place if necessary.

### **Counselling**

Referrals come through the EST or directly to Tracey Wood if it is a clear cut emotional issue.

For all referrals it is important to ensure that parents are aware of the referral being made.

For legal purposes, we require documentation, so all referrals need to be made via email or by completing the EST or Counselling referral forms.

# Addendum E:

EST referral form

---

## EST REFERRAL FORM

NAME OF LEARNER: \_\_\_\_\_ GRADE: \_\_\_\_\_

D.O.B: \_\_\_\_\_ C.A: \_\_\_\_\_

EDUCATOR: \_\_\_\_\_ DATE OF REFERRAL: \_\_\_\_\_

DATE OF EST MEETING \_\_\_\_\_ TIME OF MEETING: \_\_\_\_\_

NO SIBLINGS IN FAMILY \_\_\_\_\_ POSITION IN FAMILY \_\_\_\_\_

Has the reason for the referral been discussed with the parents? YES  NO

### 1. REASON FOR REFERRAL

Please elaborate on any areas indicated in the space provided below.

- |                           |                          |                      |                          |
|---------------------------|--------------------------|----------------------|--------------------------|
| • General Low Achievement | <input type="checkbox"/> | • Handwriting        | <input type="checkbox"/> |
| • Mathematics             | <input type="checkbox"/> | • Behaviour          | <input type="checkbox"/> |
| • Reading                 | <input type="checkbox"/> | • Attention          | <input type="checkbox"/> |
| • Spelling                | <input type="checkbox"/> | • Emotional problems | <input type="checkbox"/> |
| • Language                | <input type="checkbox"/> | • Perceptual         | <input type="checkbox"/> |
| • School Placement        | <input type="checkbox"/> | • Perceptual Motor   | <input type="checkbox"/> |
|                           |                          | • Motor Difficulties | <input type="checkbox"/> |

**2. PARENTAL ATTITUDE AND CO-OPERATION**

**With reference to the learner's problem**

- Understanding
- Co-operative
- Without insight
- Denial
- Over-concerned
- Over-protective
- Seeks guidance
- Expects school to solve

**With reference to learner's homework**

- Good supervision
- Poor supervision
- Unrealistic expectations
- Seeks guidance

**With reference to school activities**

- Actively interested
- Erratic
- Not interested

**3. OTHER RELEVANT INFORMATION REGARDING THE HOME CIRCUMSTANCES**

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**4. STRENGTHS: WHAT DO YOU LIKE ABOUT THIS BOY?**

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**5. LEARNER'S BEHAVIOUR AND ATTITUDE**

**In the classroom:**

- Good
- Distractible
- Needy
- Over compliant
- Restless
- Moody
- Talkative
- Disobedient
- Withdrawn
- Dreamy
- Anxious
- Inconsistent

**Any further comments**

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**In respect of friends/peers**

- Has many friends
- Has few friends
- Has no friends
- Follower
- Leader
- Victim
- Bully
- Disliked by peers
- Aggressive
- Withdrawn

**Towards school work**

- Positive
- Negative

**Please elaborate if marked negative**

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**6. PREPARATION OF HOMEWORK**

- Well done
- Incomplete
- Erratic
- Quality

**Please elaborate if marked quality**

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**7. HEALTH FACTORS AFFECTING LEARNER'S SCHOLASTIC PROGRESS AND BEHAVIOUR**

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**8. LEARNER PREVIOUSLY ASSESSED BY OR RECEIVED INTERVENTION FROM:**

- |                            |                          |                  |                          |
|----------------------------|--------------------------|------------------|--------------------------|
| • Remedial Teacher         | <input type="checkbox"/> | • Psychologist   | <input type="checkbox"/> |
| • Occupational Therapist   | <input type="checkbox"/> | • Play Therapist | <input type="checkbox"/> |
| • Speech Therapist         | <input type="checkbox"/> | • Psychiatrist   | <input type="checkbox"/> |
| • Hearing/Audiologist      | <input type="checkbox"/> | • Neurologist    | <input type="checkbox"/> |
| • Physiotherapist          | <input type="checkbox"/> | • Social Worker  | <input type="checkbox"/> |
| • Educational Psychologist | <input type="checkbox"/> | • Other          | <input type="checkbox"/> |
| • Eye Specialist           | <input type="checkbox"/> |                  |                          |

**Please give further details where appropriate.**

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**9. COMMENTS FROM OTHER TEACHERS INVOLVED WITH THIS LEARNER.**

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**FOUNDATION PHASE ONLY**

Please mark the following categories according to the criteria below.

Very Weak      Below Average      Average      Above Average

**LITERACY**

Vocabulary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comprehension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expression	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sentence Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expressive Language	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**READING**

Sight words	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fluency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comprehension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Word attack	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Omissions:	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>
Reversals:	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>

**SPELLING**

Reversals	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>
Omissions	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>
Phonetic Spelling	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>
Poor sight words	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>

**MATHEMATICS**

Know number names	up to 10	<input type="checkbox"/>	up to 20	<input type="checkbox"/>
Difficulties with bonds	addition	<input type="checkbox"/>	subtraction	<input type="checkbox"/>
Can seriate numbers	up to 10	<input type="checkbox"/>	up to 20	<input type="checkbox"/>
Problem solving	up to 10	<input type="checkbox"/>	up to 20	<input type="checkbox"/>
	Concrete based	<input type="checkbox"/>	good abstract thought	<input type="checkbox"/>

**HANDWRITING**

Letter Formation	no problem	<input type="checkbox"/>	problem	<input type="checkbox"/>
Spacing	no problem	<input type="checkbox"/>	problem	<input type="checkbox"/>
Posture	good	<input type="checkbox"/>	bad	<input type="checkbox"/>
Pencil Grip	correct	<input type="checkbox"/>	incorrect	<input type="checkbox"/>
Reversals	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>

Please supply all copies of outside reports received by yourself. If there is an au pair involved with this family, please ensure they attend the meeting.

Signature of Educator: \_\_\_\_\_

Date: \_\_\_\_\_

Signature of EST co-ordinator: \_\_\_\_\_

Date: \_\_\_\_\_

**INTERMEDIATE/SENIOR PHASE**

Please mark the following categories according to the criteria below.

	Very Weak	Below Average	Average	Above
<b>Average LITERACY</b>				
Language	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comprehension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spelling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mathematics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Handwriting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Please elaborate on weaknesses identified**

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**WHAT CLASSROOM ASSISTANCE HAS BEEN PROVIDED TO DATE? E.g. test support**

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**Please supply all copies of outside reports received by yourself. If there is an au pair involved with this family, please ensure they attend the meeting.**

**Signature of Educator:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Signature of EST co-ordinator:** \_\_\_\_\_

**Date:** \_\_\_\_\_

# Addendum F:

## Information regarding student portfolios

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Definition of a Learning Profile according to WCED policy.

“A learning profile is a panoramic representation of how the learner seems to his/her observer across a range of qualities; or reflecting on one quality but seen through a range of assessment methods.”

### **This Profile should contain:**

- The learners' medical records.
- Reports from Occupational Therapists, Speech Therapists and Physiotherapists.
- Copies of pre-school reports.
- Learner's achievement records (cumulative record card and all reports until now).
- Personal record sheet.
- At the end of the year the learner's main **needs** and **strengths** need to be entered to pass on to the next educator (main things this educator needs to know). This information is presently contained on our Rondebosch Boys' Preparatory School personal record sheet and needs to be completed every year. It is a progressive sheet.
- Interview card.
- This must be filled in for every intervention with a learner i.e. relevant phone calls to parents and vice versa, interviews (EST and meet-the-teacher) and any other incident to do with the learner which may be important/relevant.
- EST minutes + EST referral forms.
- Admission forms and birth certificate which is handled by the office staff.
- Any other relevant correspondence.

**GENERAL:**

- Any reports received from therapists or parents must please be passed on to the remedial staff.
- Please write the address on the cumulative card in **pencil**. All other information on the interview card and record sheet to be in **black pen** as it makes for clearer copies.
- Everything in the Profile remains **confidential at all times**.
- When removing a profile from the office please enter the details in the profile register kept on top of the cabinets in Mrs Wood's office and sign it back in.
- Please put any relevant information you want us to know in writing and place in our pigeon holes and we will get back to you.
- We thank you for your co-operation.

REMEDIAL STAFF

# Addendum G:

## Activity lesson plans

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### DELTA BANDWIDTH

#### Grade 4 Arts & Culture

#### To be conducted before Maths

<b>Delta Bandwidth:</b>	Sleep, recovery, solving complex problems
<b>Lesson following activity:</b>	Maths
<b>Track used:</b>	Educators can choose tracks with a tempo of approximately 60 beats per minute. The researcher made use of Pachelbel's Canon in D.
<b>Case study activity:</b>	Relaxation
<b>Objective:</b>	To calm class and ensure a relaxed state of being
<b>What the educator needs:</b>	i) a classroom with space for the class to lie down  ii) Music with tempo of approximately 60 beats per minute. Meditation music without lyrics is recommended.

#### Structure of activity:

- 1) After the main planned Arts & Culture lesson is concluded, the educator will ask the class to quietly find a space in the classroom and to lie on their backs. If the classroom has many desks, it may be advisable to find another room to conduct this activity.
- 2) The educator will ask that the class closes their eyes and that no one is to communicate with each other from this point.
- 3) Once the class has settled, the educator will explain that they will be listening to a track of music and that they are to listen to the given instructions while the music is playing. It is suggested that the class is told what to expect to avoid giggles and excitement.
- 4) The educator will put on a track used for meditation for five minutes.

- 5) While this track is playing, the educator will lead the class in breathing in time to the music. This can be expanded by including:  
“Inhale for the count five; inhale further for the count of three; hold for the count of five; exhale through your mouth for the count of five; further exhale for the count of three”.
- 6) The educator can explain (on second or third occasion of conducting this activity unless dealing with a well behaved class) that the inhaling should physically expand the stomach area.
- 7) The music volume will be turned down before being switched off. Do not switch the music off suddenly, as this tends to cause excitement and cause for comments. The educator should now instruct the class as to what is expected of them for their next lesson.

**THETA BANDWIDTH****Grade 4 Arts & Culture****To be conducted before Art, Creative writing and Music**

<b>Theta Bandwidth:</b>	Insight and creativity
<b>Lesson following activity:</b>	Art, Creative writing (languages) and Music
<b>Track used:</b>	65-75 beats per minute
<b>Case study activity:</b>	Relaxation and breathing exercises
<b>Objective:</b>	To relax the class in order to enhance creativity from Theta brainwaves
<b>What the educator needs:</b>	i) A classroom with space for the class to lie down  ii) Music with tempo of approximately 65-75 beats per minute. Popular ballad was used.

**Structure of activity:**

When one functions normally one's heart rate averages around 86 beats per minute. When one falls asleep, the heart rate drops to anything below 72 beats per minute. Theta brainwaves are found when one is falling asleep and ideally when one wakes up, so the class had to be as calm as possible. While this activity focuses on breathing exercises, it differs from the Delta brainwave activity due to the faster tempo. This prohibits the class from becoming too relaxed or drowsy.

- 1) 1 – 3 the same as the Delta activity.
- 2) One can make this activity more relevant to the class by choosing a popular ballad as the musical track. Classes enjoy listening to music that they recognise.
- 3) The music should not be played at too loud a volume as at all times the educator should be heard.

**BETA BANDWIDTH****Grade 4 Arts & Culture****To be conducted before the writing of a test**

<b>Beta Bandwidth:</b>	Problem solving and processing information
<b>Lesson following activity:</b>	The writing of a test
<b>Track used:</b>	120 beats per minute
<b>Case study activity:</b>	Energetic movements to music
<b>Objective:</b>	To invigorate the class. An increased heart rate will enhance Beta brainwaves and therefore the recollection of information for test writing or problem solving.
<b>What the educator needs:</b>	i) A classroom with space for the class to lie down  ii) Music with tempo of approximately 120 beats per minute. Classes tend to appreciate popular music that is current.

**Structure of activity:**

When wanting to solve problems or process information, the brain works on the Beta bandwidth. When children are alert, they are functioning on the faster brainwaves which allow the brain to be fully engaged to complete tasks and process information. This is achieved with music with a tempo of 120 beats per minute.

- 1) After the planned Arts & Culture lesson is concluded, the educator asks the class to quietly find a space in the classroom and to lie on their backs. If the classroom has many desks, it may be advisable to find another room to conduct this activity.
- 2) The educator asks that the class closes their eyes and that no one is to communicate with each other from this point.

- 3) Once the class has settled, the educator explains that they will be listening to a track of music and that they are to listen to the given instructions while the music is playing. It is suggested that the class is told what to expect to avoid giggles and excitement.
- 4) The educator should begin this activity with a basic breathing exercise, which should be known to the classes by this point. The same music from the Theta activity can be used for this breathing exercise.
- 5) After the class has completed the breathing exercise and has settled, the educator can change the music to music of a faster tempo (approximately 120 beats per minute). For this section of the activity the class is to stand with enough space around each individual for comfortable arm movement. The class can open their eyes for this section.
- 6) The class should now stand with enough space around each individual for comfortable arm movement.
- 7) The educator should lead the class through a series of basic aerobic movements, These movements can include: step-together movements, stretching, jumping, "grapevine", etc. The main objective is to get the heart rate up from exertion. This is a very fun activity and the classes love jumping around.
- 8) Once the entire music track has been played (a duration of approximately five minutes), turn the volume down before switching off the music entirely. Continue with the following lesson.

**SMR BANDWIDTH****Grade 4 Arts & Culture****To be conducted before presenting prepared work**

<b>SMR Bandwidth:</b>	Recalling information and creativity
<b>Lesson following activity:</b>	Any: languages a good option for oral presentations
<b>Track used:</b>	80 beats per minute
<b>Case study activity:</b>	Breathing exercises and controlled movements
<b>Objective:</b>	To relax the class to enhance SMR brainwaves – there is a fine line between SMR and Theta. The key is the choice of music for the activity. The class should not be allowed to become too comfortable or potentially drowsy.
<b>What the educator needs:</b>	i) A classroom with space for the class to lie down  ii) Music with tempo of approximately 80 beats per minute.

**Structure of activity:**

SMR brainwaves are associated with relaxed and concentrated behaviours. To achieve increased SMR brainwaves, a slower tempo is needed to accompany controlled movements. Once again, the activity should be introduced with a breathing exercise.

- 1) After the main planned Arts & Culture lesson is concluded, the educator asks the class to quietly find a space in the classroom and to lie on their backs. If the classroom has many desks, it may be advisable to find another room to conduct this activity.
- 2) The educator asks that the class closes their eyes and that no one is to communicate with each other from this point.
- 3) Once the class has settled, the educator explains that they will be listening to a track of music and that they are to listen to the given instructions while the music is playing. It is suggested that the class is told what to expect to avoid giggles and excitement.

**HIGH BETA BANDWIDTH****Grade 4 Arts & Culture****To be conducted before Science and Project Work**

<b>High Beta Bandwidth:</b>	Recalling information
<b>Lesson following activity:</b>	Science, EMS, Geography
<b>Track used:</b>	120-130 beats per minute
<b>Case study activity:</b>	Breathing exercises and controlled movements
<b>Objective:</b>	To invigorate the class: this activity is an energised variation of the Beta activity.
<b>What the educator needs:</b>	i) A classroom with space for the class to lie down  ii) Music with tempo of approximately 120-130 beats per minute. Popular music with a very prominent bass line was used during the case study of this activity.

**Structure of activity:**

When functioning on High Beta brainwaves, one becomes very energetic and is able to write very quickly. This brainwave, aptly named, is an enhanced version of the Beta brainwaves. As the class becomes invigorated, they are able to focus and apply themselves to information recollection (test writing).

- 1) After the main planned Arts & Culture lesson is concluded, the educator asks the class to quietly find a space in the classroom and to lie on their backs. If the classroom has many desks, it may be advisable to find another room to conduct this activity.
- 2) The educator will ask that the class closes their eyes and that no one is to communicate with each other from this point.
- 3) Once the class has settled, the educator will explain that they will be listening to a track of music and that they are to listen to the given instructions while the music is playing. It is suggested that the class is told what to expect to avoid giggles and excitement.

- 4) The class should now be led through the activity in the same fashion as the Beta brainwave activity. Once a basic sequence of aerobic movements has been mastered (consisting of arm movements, side lunges and stepping in time to the music), the educator should instruct the class to attempt the same sequence in double time.

# Addendum H:

## Observation Form

### Grade 4 Arts & Culture: Musical Activity

#### Class teacher feedback

Date \_\_\_\_\_

Subject taught after Arts & Culture: \_\_\_\_\_

What was the class expected to do during this lesson? (*please tick*)

Reading	Writing	Comprehension	Solving of problems	Movement/ physical activity
---------	---------	---------------	---------------------	-----------------------------

Please comment on the following boys' behaviour after their music lesson today, with special reference to the period directly after music.

Please also add if any particular boy not listed below behaved in an unusual manner in comparison to his usual behaviour.

Name: \_\_\_\_\_

Calmer than usual: worked well	Lethargic: behaviour peculiar due to lazy manner	Apathetic: fulfilled tasks without usual enthusiasm	Boisterous and unruly after music	Other (please specify)
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# Addendum I:

## Arts and Culture Lesson Plans

### RONDEBOSCH BOYS' PREPARATORY SCHOOL LESSON PLAN TEMPLATE



Focus Learning Area/s <b>DANCE, DRAMA, MUSIC</b>	<b>FOUR</b>	Grade	<b>1 period plw</b>	No of periods
Content Focus /Topic/Concept				
Key Questions/s				
Focus LO and AS	<b>DR 4.1.1, 4.1.2, 4.1.3</b>			
Integrated LO and AS				
Term	<b>ONE</b>			
Knowledge, Skills, Attitudes and Values (Derived from AS)				
Knowledge / Concepts	Skills	Values and Attitudes		
• Characterisation	• characterisation	• Characterisation		
• Relaxation	• Relaxation -	• Relaxation		
• Correct breathing	Breathing / Posture			
• Alignment / Posture				
Learning Activities and Resources				
Week no: <b>1</b>	<b>JANUARY</b>	Week no: <b>2</b>	<b>JANUARY</b>	Week no: <b>3</b>
Date: <b>22,23,24</b>		Date: <b>29,30,31</b>		Date: <b>5,6,7</b>
• Introduction to A.C.	• Relaxation ex's	• ASSESSMENT pg 50 - 53.		
• Personal Q+A.	• Improvisation d characterisation	→ playing with breathing + posture.		
• Cover page for homework.	• "I wish I were" Unit 1, pg 49			
Assessment				
Forms of Assessment			Assessment Activity/ies (Brief Explanation)	
<input checked="" type="checkbox"/>	Written Work		Data Handling	x Movement
<input checked="" type="checkbox"/>	Presentations		Map Reading	x Isolation
<input checked="" type="checkbox"/>	Demonstrations		OBE Tests	x correct breathing
	Performances		Essays	x posture
	Journals		Debates	x Breathing exercises
	Interviews		Oral	x using imagination
	Field Work		Art Processes	
	Models		Projects	
	Reading		Investigations	
	Context Analysis		Exhibitions	
What Assessor will do		Who will Assess		Instrument Used
<input checked="" type="checkbox"/>	Observe	<input checked="" type="checkbox"/>	Teacher	<input checked="" type="checkbox"/>
	Listen	<input checked="" type="checkbox"/>	Self	Checklist
	Reading		Peer	Assessment Scale
<input checked="" type="checkbox"/>	Interpret		Another Teacher	Analytical Rubric
	Review		Outside Expert	Holistic Rubric
	Question		Class Panel	Memorandum
	Confer			
	Interview			

## RONDEBOSCH BOYS' PREPARATORY SCHOOL LESSON PLAN TEMPLATE



Focus Learning Areas/s <b>DANCE, DRAMA, MUSIC</b>		Grade <b>FOUR</b>	Period <b>1</b>	No of periods	
Content Focus /Topic/Concept					
Key Questions/s					
Focus LO and AS <b>4.1.1, 4.1.2, 4.1.3</b>					
Integrated LO and AS					
Term <b>ONE</b>					
<b>Knowledge, Skills, Attitudes and Values (Derived from AS)</b>					
Knowledge / Concepts	Skills	Values and Attitudes			
<b>composer</b>	<b>choreographing movement to composed music / warcy.</b>	<b>original composition - imagination</b>			
<b>Learning Activities and Resources</b>					
Week no: <b>4</b> Date: <b>12,13,14</b>	<b>FEBRUARY</b>	Week no: <b>5</b> Date:	<b>FEBRUARY</b>	Week no: <b>6</b> Date:	
<b>compose a warcy for</b>	<b>song -</b>	<b>song -</b>			
<b>ASSESSMENT</b>	<b>"BREATHING WITH BEETHOVEN"</b>	<b>"BREATHING WITH BEETHOVEN"</b>			
<b>(interhouse song)</b>					
<b>Assessment</b>					
<b>Forms of Assessment</b>			<b>Assessment Activity/ies (Brief Explanation)</b>		
<input checked="" type="checkbox"/>	Written Work	<input type="checkbox"/>	Data Handling	<b>performing an original composition</b>	
<input checked="" type="checkbox"/>	Presentations	<input type="checkbox"/>	Map Reading		
<input checked="" type="checkbox"/>	Demonstrations	<input type="checkbox"/>	OBE Tests		
<input type="checkbox"/>	Performances	<input type="checkbox"/>	Essays		
<input type="checkbox"/>	Journals	<input type="checkbox"/>	Debates		
<input type="checkbox"/>	Interviews	<input type="checkbox"/>	Oral		
<input type="checkbox"/>	Field Work	<input type="checkbox"/>	Art Processes		
<input type="checkbox"/>	Models	<input type="checkbox"/>	Projects		
<input type="checkbox"/>	Reading	<input type="checkbox"/>	Investigations		
<input type="checkbox"/>	Context Analysis	<input type="checkbox"/>	Exhibitions		
<b>What Assessor will do</b>			<b>Instrument Used</b>		
<input checked="" type="checkbox"/>	Observe	<input checked="" type="checkbox"/>	Teacher		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Listen	<input type="checkbox"/>	Self		<input type="checkbox"/>
<input type="checkbox"/>	Reading	<input type="checkbox"/>	Peer	<input type="checkbox"/>	
<input type="checkbox"/>	Interpret	<input type="checkbox"/>	Another Teacher	<input type="checkbox"/>	
<input type="checkbox"/>	Review	<input type="checkbox"/>	Outside Expert	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	Question	<input type="checkbox"/>	Class Panel	<input type="checkbox"/>	
<input type="checkbox"/>	Confer	<input type="checkbox"/>		<input type="checkbox"/>	
<input type="checkbox"/>	Interview	<input type="checkbox"/>		<input type="checkbox"/>	

## RONDEBOSCH BOYS' PREPARATORY SCHOOL LESSON PLAN TEMPLATE



Focus Learning Area/s <b>DANCE, DRAMA, MUSIC</b>		FOUR	Grade	1 PERIOD P/W	No of periods
Content Focus /Topic/Concept					
Key Questions/s					
Focus LO and AS MU 4.1.2, 4.1.1, 4.2.1, 4.2.2					
Integrated LO and AS					
Term ONE					
<b>Knowledge, Skills, Attitudes and Values (Derived from AS)</b>					
Knowledge / Concepts		Skills		Values and Attitudes	
• Note values • Time signatures		• Recognition & understanding of note values  • Ability to read time signatures			
<b>Learning Activities and Resources</b>					
Week no: 7	MARCH	Week no: 8	MARCH	Week no: 9	MARCH
Date: 4,5,6		Date: 11,12,13		Date: 18,19	
• Learn CROCODILE SONG		• WORKSHEET (recognise note values from crocodile song)		4K → miss lesson due to BREAK UP.  choreographing own movements to chosen music - boys in groups.	
• Revise Gr 3 work: note values & time signatures					
(*) CLASS SHEETS					
<b>Assessment</b>					
<b>Forms of Assessment</b>				<b>Assessment Activity/ies (Brief Explanation)</b>	
<input checked="" type="checkbox"/>	Written Work	<input type="checkbox"/>	Data Handling	Worksheet: class.	
<input type="checkbox"/>	Presentations	<input type="checkbox"/>	Map Reading		
<input type="checkbox"/>	Demonstrations	<input type="checkbox"/>	OBE Tests		
<input checked="" type="checkbox"/>	Performances	<input type="checkbox"/>	Essays		
<input type="checkbox"/>	Journals	<input type="checkbox"/>	Debates		
<input type="checkbox"/>	Interviews	<input type="checkbox"/>	Oral		
<input type="checkbox"/>	Field Work	<input type="checkbox"/>	Art Processes		
<input type="checkbox"/>	Models	<input type="checkbox"/>	Projects		
<input type="checkbox"/>	Reading	<input type="checkbox"/>	Investigations		
<input checked="" type="checkbox"/>	Context Analysis	<input type="checkbox"/>	Exhibitions		
<b>What Assessor will do</b>		<b>Who will Assess</b>		<b>Instrument Used</b>	
<input checked="" type="checkbox"/>	Observe	<input checked="" type="checkbox"/>	Teacher	<input checked="" type="checkbox"/>	Checklist
<input checked="" type="checkbox"/>	Listen	<input checked="" type="checkbox"/>	Self	<input type="checkbox"/>	Assessment Scale
<input checked="" type="checkbox"/>	Reading	<input checked="" type="checkbox"/>	Peer	<input type="checkbox"/>	Analytical Rubric
<input type="checkbox"/>	Interpret	<input type="checkbox"/>	Another Teacher	<input type="checkbox"/>	Holistic Rubric
<input type="checkbox"/>	Review	<input type="checkbox"/>	Outside Expert	<input type="checkbox"/>	Memorandum
<input type="checkbox"/>	Question	<input type="checkbox"/>	Class Panel	<input checked="" type="checkbox"/>	WORKSHEET
<input type="checkbox"/>	Confer	<input type="checkbox"/>		<input type="checkbox"/>	
<input type="checkbox"/>	Interview	<input type="checkbox"/>		<input type="checkbox"/>	

## RONDEBOSCH BOYS' PREPARATORY SCHOOL LESSON PLAN TEMPLATE



Focus Learning Area/s <b>DANCE, DRAMA, MUSIC</b>		Four	Grade	1 period p/w	No of periods
Content Focus /Topic/Concept		MOVEMENT			
Key Questions/s					
Focus LO and AS		MU 4.1.2, 4.2.1			
Integrated LO and AS					
Term		Two			
<b>Knowledge, Skills, Attitudes and Values (Derived from AS)</b>					
Knowledge / Concepts		Skills		Values and Attitudes	
. MUSIC is in meter		Determines the meter of a piece of music		Team work: listening	
. How to move to a specific meter.		Ability to move in time		sharing	
. choreographed movement.		Creative expression			
<b>Learning Activities and Resources</b>					
Week no: 1	APRIL	Week no: 2	APRIL	Week no: 3	MAY.
Date: 21, 24		Date: 28, 29		Date: 4, 6, 8	
Choreographed movement		choreographed movement: Performance		"MEET THE ORCHESTRA"  the orchestra the string family	
		<u>Assessment</u>		CLASS WORKSHEETS	
<b>Assessment</b>					
<b>Forms of Assessment</b>				<b>Assessment Activity/ies (Brief Explanation)</b>	
<input checked="" type="checkbox"/>	Written Work	<input type="checkbox"/>	Data Handling	movement (20) music 15 movements 10 completion of task 15	
<input checked="" type="checkbox"/>	Presentations	<input type="checkbox"/>	Map Reading		
<input type="checkbox"/>	Demonstrations	<input type="checkbox"/>	OBE Tests		
<input checked="" type="checkbox"/>	Performances	<input type="checkbox"/>	Essays		
<input type="checkbox"/>	Journals	<input type="checkbox"/>	Debates		
<input type="checkbox"/>	Interviews	<input type="checkbox"/>	Oral		
<input type="checkbox"/>	Field Work	<input type="checkbox"/>	Art Processes		
<input type="checkbox"/>	Models	<input type="checkbox"/>	Projects		
<input checked="" type="checkbox"/>	Reading	<input type="checkbox"/>	Investigations		
<input type="checkbox"/>	Context Analysis	<input type="checkbox"/>	Exhibitions		
<b>What Assessor will do</b>		<b>Who will Assess</b>		<b>Instrument Used</b>	
<input checked="" type="checkbox"/>	Observe	<input checked="" type="checkbox"/>	Teacher	<input checked="" type="checkbox"/>	Checklist
<input checked="" type="checkbox"/>	Listen	<input type="checkbox"/>	Self	<input type="checkbox"/>	Assessment Scale
<input checked="" type="checkbox"/>	Reading	<input checked="" type="checkbox"/>	Peer	<input type="checkbox"/>	Analytical Rubric
<input type="checkbox"/>	Interpret	<input type="checkbox"/>	Another Teacher	<input type="checkbox"/>	Holistic Rubric
<input type="checkbox"/>	Review	<input type="checkbox"/>	Outside Expert	<input type="checkbox"/>	Memorandum
<input type="checkbox"/>	Question	<input type="checkbox"/>	Class Panel	<input type="checkbox"/>	
<input type="checkbox"/>	Confer	<input type="checkbox"/>		<input type="checkbox"/>	
<input type="checkbox"/>	Interview	<input type="checkbox"/>		<input type="checkbox"/>	

## RONDEBOSCH BOYS' PREPARATORY SCHOOL LESSON PLAN TEMPLATE



Focus Learning Area/s <b>MUSIC, DRAMA, DANCE</b>		Grade <b>FOUR</b>	No of periods <b>1 period plw</b>		
Content Focus / Topic/Concept <b>RECOGNISING VARIOUS INSTRUMENTS</b>					
Key Questions/s					
Focus LO and AS <b>4.2.1, 4.2.2, D.A 4.1.1, 4.2.1, 4.3.2.</b>					
Integrated LO and AS					
Term <b>TWO</b>					
<b>Knowledge, Skills, Attitudes and Values (Derived from AS)</b>					
Knowledge / Concepts		Skills		Values and Attitudes	
THE SYMPHONY ORCHESTRA : recognising each instrument + being able to play it.		Knowledge of instruments of the orchestra: names & how they are played			
NO WORDS ? miming		Being able to portray an emotion or concept without words			
<b>Learning Activities and Resources</b>					
Week no: <b>4</b>	<b>MAY</b>	Week no: <b>5</b>	<b>MAY</b>	Week no: <b>6</b>	
Date: <b>12, 14, 15</b>		Date: <b>19, 20, 22</b>		Date: <b>26, 27, 29</b>	
"MEET THE ORCHESTRA"		"MEET THE ORCHESTRA"		Group Activity: Miming <b>ASSESSMENT (PEER)</b>	
- the brass family <b>CLASS WORKSHEETS</b>		- the woodwind family <b>CLASS WORKSHEETS</b>		portraying actions and emotions without words	
<b>Assessment</b>					
Forms of Assessment			Assessment Activity/ies (Brief Explanation)		
<input checked="" type="checkbox"/>	Written Work	<input type="checkbox"/>	Data Handling	class worksheets x3. Each is out of 10.  Miming Activity: to perform simple skit (without words) in pairs. Peer assess.	
<input checked="" type="checkbox"/>	Presentations	<input type="checkbox"/>	Map Reading		
<input type="checkbox"/>	Demonstrations	<input type="checkbox"/>	OBE Tests		
<input checked="" type="checkbox"/>	Performances	<input type="checkbox"/>	Essays		
<input type="checkbox"/>	Journals	<input type="checkbox"/>	Debates		
<input type="checkbox"/>	Interviews	<input type="checkbox"/>	Oral		
<input type="checkbox"/>	Field Work	<input type="checkbox"/>	Art Processes		
<input type="checkbox"/>	Models	<input type="checkbox"/>	Projects		
<input type="checkbox"/>	Reading	<input type="checkbox"/>	Investigations		
<input type="checkbox"/>	Context Analysis	<input type="checkbox"/>	Exhibitions		
What Assessor will do			Instrument Used		
<input checked="" type="checkbox"/>	Observe	<input checked="" type="checkbox"/>	Teacher		<input checked="" type="checkbox"/>
<input type="checkbox"/>	Listen	<input type="checkbox"/>	Self	<input type="checkbox"/>	Assessment Scale
<input checked="" type="checkbox"/>	Reading	<input checked="" type="checkbox"/>	Peer	<input type="checkbox"/>	Analytical Rubric
<input type="checkbox"/>	Interpret	<input type="checkbox"/>	Another Teacher	<input type="checkbox"/>	Holistic Rubric
<input type="checkbox"/>	Review	<input type="checkbox"/>	Outside Expert	<input type="checkbox"/>	Memorandum
<input type="checkbox"/>	Question	<input type="checkbox"/>	Class Panel	<input checked="" type="checkbox"/>	Worksheet
<input type="checkbox"/>	Confer	<input type="checkbox"/>		<input type="checkbox"/>	
<input type="checkbox"/>	Interview	<input type="checkbox"/>		<input type="checkbox"/>	

## RONDEBOSCH BOYS' PREPARATORY SCHOOL LESSON PLAN TEMPLATE



Focus Learning Area/s <b>MUSIC, DRAMA &amp; DANCE</b>		FOUR	Grade	1 period P/W	No of periods
Content Focus /Topic/Concept		RHYTHM, NOTATION & ORIGINAL COMPOSITION			
Key Questions/s					
Focus LO and AS		DR 4.1.1, 4.1.2, 4.4.1, 4.3.2.			
Integrated LO and AS					
Term		TWO			
<b>Knowledge, Skills, Attitudes and Values (Derived from AS)</b>					
Knowledge / Concepts		Skills		Values and Attitudes	
• note values and time signatures from T1.		• Expressing an advert concept through original lyrics & music.		• Group work for advert	
		• Performance of perc. instruments. (Basic note reading)		• Group work for rhythmic game.	
<b>Learning Activities and Resources</b>					
Week no: 7.	JUNE	Week no: 8	JUNE	Week no: 9	JUNE
Date: 2,3,5		Date: 9,10,12		Date: 16,17,19	
Group Activity:		ASSESSMENT:			
Advert		SPOT TEST		Rhythmic Exercise	
ASSESSMENT		(Revision of note values + time signatures)		Class placed in groups (of instr.) and trained to play specific rhythm to create multi-rhythmic texture	
compose a jingle for the given product.					
<b>Assessment</b>					
Forms of Assessment			Assessment Activity/ies (Brief Explanation)		
<input checked="" type="checkbox"/>	Written Work	<input type="checkbox"/>	Data Handling	Advert Assessment (120) Lyrics (10) originality (15) group work (15) spot test (120) revision of T1 work.	
<input checked="" type="checkbox"/>	Presentations	<input type="checkbox"/>	Map Reading		
<input type="checkbox"/>	Demonstrations	<input checked="" type="checkbox"/>	OBE Tests		
<input checked="" type="checkbox"/>	Performances	<input type="checkbox"/>	Essays		
<input type="checkbox"/>	Journals	<input type="checkbox"/>	Debates		
<input type="checkbox"/>	Interviews	<input checked="" type="checkbox"/>	Oral		
<input type="checkbox"/>	Field Work	<input type="checkbox"/>	Art Processes		
<input type="checkbox"/>	Models	<input type="checkbox"/>	Projects		
<input type="checkbox"/>	Reading	<input type="checkbox"/>	Investigations		
<input type="checkbox"/>	Context Analysis	<input type="checkbox"/>	Exhibitions		
What Assessor will do		Who will Assess		Instrument Used	
<input checked="" type="checkbox"/>	Observe	<input checked="" type="checkbox"/>	Teacher	<input checked="" type="checkbox"/>	Checklist
<input type="checkbox"/>	Listen	<input type="checkbox"/>	Self	<input type="checkbox"/>	Assessment Scale
<input checked="" type="checkbox"/>	Reading	<input type="checkbox"/>	Peer	<input type="checkbox"/>	Analytical Rubric
<input type="checkbox"/>	Interpret	<input type="checkbox"/>	Another Teacher	<input type="checkbox"/>	Holistic Rubric
<input type="checkbox"/>	Review	<input type="checkbox"/>	Outside Expert	<input type="checkbox"/>	Memorandum
<input type="checkbox"/>	Question	<input type="checkbox"/>	Class Panel	<input type="checkbox"/>	
<input type="checkbox"/>	Confer	<input type="checkbox"/>		<input type="checkbox"/>	
<input type="checkbox"/>	Interview	<input type="checkbox"/>		<input type="checkbox"/>	

## RONDEBOSCH BOYS' PREPARATORY SCHOOL LESSON PLAN TEMPLATE



Focus Learning Area/s		FOUR	Grade	1 period P/W	No of periods
MUSIC, DANCE & DRAMA.					
Content Focus /Topic/Concept		RHYTHMIC GAME: note values			
Key Questions/s					
Focus LO and AS		DR 4.1.1, 4.1.2, 4.4.1, 4.3.2.			
Integrated LO and AS					
Term		THO			
Knowledge, Skills, Attitudes and Values (Derived from AS)					
Knowledge / Concepts		Skills		Values and Attitudes	
note values and time signatures from TV		Performance of perc. instruments		Group work.	
		Basic reading of rhythms			
Learning Activities and Resources					
Week no: 10	JUNE	Week no:		Week no:	
Date: 28.2.2020		Date:		Date:	
Rhythmic Exercise continued.					
Assessment					
Forms of Assessment			Assessment Activity/ies (Brief Explanation)		
Written Work		Data Handling	<div style="font-size: 2em; transform: rotate(-45deg); opacity: 0.5;">ASSESSMENT</div>		
Presentations		Map Reading			
Demonstrations		ORF Tests			
Performances		Essays			
Journals		Debates			
Interviews		Oral			
Field Work		Art Processes			
Models		Projects			
Reading		Investigations			
Context Analysis		Exhibitions			
What Assessor will do		Who will Assess		Instrument Used	
Observe		Teacher		Checklist	
Listen		Self		Assessment Scale	
Reading		Peer		Analytical Rubric	
Interpret		Another Teacher		Holistic Rubric	
Review		Outside Expert		Memorandum	
Question		Class Panel			
Confer					
Interview					

## RONDEBOSCH BOYS' PREPARATORY SCHOOL LESSON PLAN TEMPLATE



Focus Learning Area/s <b>DANCE, DRAMA, MUSIC</b>		Grade <b>FOUR.</b>	1 50min plw	No of periods	
Content Focus /Topic/Concept <b>PETER &amp; THE WOLF!</b>					
Key Questions/s					
Focus LO and AS Integrated LO and AS		<b>MU. 4.2, 4.1, 4.3 AS:</b>			
Term		<b>TERM THREE</b>			
<b>Knowledge, Skills, Attitudes and Values (Derived from AS)</b>					
Knowledge / Concepts		Skills	Values and Attitudes		
Recognition of themes & orchestral instruments' visually & audio.		To identify various orchestral instruments			
<b>Learning Activities and Resources</b>					
Week no: 1	<b>JULY</b>	Week no: 2	<b>JULY</b>	Week no: 3	
Date: 21, 23, 24		Date: 28, 30, 31		<b>AUGUST</b> Date: 4, 6, 7	
<b>PETER &amp; THE WOLF</b>		<b>PETER &amp; THE WOLF</b>		<b>PETER &amp; THE WOLF</b>	
Introduction:		Video		Video	
Listen to Dame Edna's C.D.		(DAVID BOWIE IS PRESENTER; PUPPETS ARE CHARACTERS. IN BACK ROOM)		Assessment: Pe & W poster project handed out.	
<b>Assessment</b>					
<b>Forms of Assessment</b>			<b>Assessment Activity/ies (Brief Explanation)</b>		
<input checked="" type="checkbox"/>	Written Work		Data Handling	<b>PROJECT / POSTER:</b> using pictures of characters, make poster. Stick picture of instrument next to correct character.	
	Presentations		Map Reading		
	Demonstrations		OBE Tests		
	Performances		Essays		
	Journals		Debates		
	Interviews		Oral		
	Field Work	<input checked="" type="checkbox"/>	Art Processes		
	Models		Projects		
	Reading		Investigations		
	Context Analysis		Exhibitions		
<b>What Assessor will do</b>			<b>Instrument Used</b>		
	Observe	<input checked="" type="checkbox"/>	Teacher		<input checked="" type="checkbox"/> Checklist
	Listen		Self		Assessment Scale
	Reading		Peer	Analytical Rubric	
<input checked="" type="checkbox"/>	Interpret		Another Teacher	Holistic Rubric	
<input checked="" type="checkbox"/>	Review		Outside Expert	Memorandum	
	Question		Class Panel		
	Confer				
	Interview				

## RONDEBOSCH BOYS' PREPARATORY SCHOOL LESSON PLAN TEMPLATE



Focus Learning Area/s <b>DANCE, DRAMA, MUSIC</b>		FOUR.	Grade	30mins p/w	No of periods		
Content Focus /Topic/Concept		PETER & THE WOLF, BODY PERCUSSION, DRAMA					
Key Questions/s							
Focus LO and AS		4.1, 4.2, 4.3, 4.4 : 4.1.1, 4.2.1, 4.2.2, 4.3.1					
Integrated LO and AS							
Term		TERM THREE					
Knowledge, Skills, Attitudes and Values (Derived from AS)							
Knowledge / Concepts		Skills		Values and Attitudes			
Peter & Wolf w/s.		compose rhythms using body & no voice.		composition & free expression			
Body Percussion							
mirroring movement		mirroring peers		mirroring - drama.			
Learning Activities and Resources							
Week no: 4	AUGUST	Week no: 5	AUGUST	Week no: 6	AUGUST		
Date: 11,13,14		Date: 18, 20, 21		Date: 25, 27, 28			
PETER & THE WOLF		BODY PERCUSSION		THE CIRCUS			
WORKSHEET (ASSESSMENT)		(TEACHER ASSESSMENT)		BASELINE ASSESSMENT			
		Groups of 4, read to perform rhythms using bodies.		pg 39 & 40.			
				HAND OUT PROJECTS!!			
Assessment							
Forms of Assessment				Assessment Activity/ies (Brief Explanation)			
<input checked="" type="checkbox"/>	Written Work	<input type="checkbox"/>	Data Handling	Worksheet will be marked according to memo.  Body percussion following rubric.			
<input checked="" type="checkbox"/>	Presentations	<input type="checkbox"/>	Map Reading				
<input checked="" type="checkbox"/>	Demonstrations	<input type="checkbox"/>	OBE Tests				
<input checked="" type="checkbox"/>	Performances	<input type="checkbox"/>	Essays				
<input type="checkbox"/>	Journals	<input type="checkbox"/>	Debates				
<input type="checkbox"/>	Interviews	<input type="checkbox"/>	Oral				
<input type="checkbox"/>	Field Work	<input type="checkbox"/>	Art Processes				
<input type="checkbox"/>	Models	<input type="checkbox"/>	Projects				
<input type="checkbox"/>	Reading	<input type="checkbox"/>	Investigations				
<input type="checkbox"/>	Context Analysis	<input type="checkbox"/>	Exhibitions				
What Assessor will do						Instrument Used	
<input checked="" type="checkbox"/>	Observe	<input checked="" type="checkbox"/>	Teacher			<input type="checkbox"/>	Checklist
<input checked="" type="checkbox"/>	Listen	<input type="checkbox"/>	Self			<input type="checkbox"/>	Assessment Scale
<input checked="" type="checkbox"/>	Reading	<input type="checkbox"/>	Peer	<input checked="" type="checkbox"/>	Analytical Rubric		
<input checked="" type="checkbox"/>	Interpret	<input type="checkbox"/>	Another Teacher	<input type="checkbox"/>	Holistic Rubric		
<input type="checkbox"/>	Review	<input type="checkbox"/>	Outside Expert	<input checked="" type="checkbox"/>	Memorandum		
<input type="checkbox"/>	Question	<input type="checkbox"/>	Class Panel	<input type="checkbox"/>			
<input type="checkbox"/>	Confer	<input type="checkbox"/>		<input type="checkbox"/>			
<input type="checkbox"/>	Interview	<input type="checkbox"/>		<input type="checkbox"/>			

## RONDEBOSCH BOYS' PREPARATORY SCHOOL LESSON PLAN TEMPLATE



Focus Learning Area/s	FOUR	Grade	1 30min P/W	No of periods
DANCE, DRAMA, MUSIC				
Content Focus /Topic/Concept	DRAMA & MUSIC (RHYTHMIC PERFORMANCE)			
Key Questions/s				
Focus LO and AS	4.1, 4.2, 4.3, 4.4			
Integrated LO and AS				
Term	TERM THREE			
Knowledge, Skills, Attitudes and Values (Derived from AS)				
Knowledge / Concepts	Skills	Values and Attitudes		
· performance of various rhythms in numerous layers	· interpretation (DRAMATICALLY)	Importance of completion of projects		
· knowledge of mechanisms of instrument	· performance			
	· making own instrument			
Learning Activities and Resources				
Week no: 7	SEPTEMBER	Week no: 8	SEPTEMBER	Week no: 9
Date: 1, 3, 4		Date: 8, 9, 10		Date: 15, 17, 18
INTER-SITUATIONS: each boy will be given a "character" Boys in circle, 2 conversing in middle. 1 replaced by new boy, etc.	PRESENTATION OF INSTRUMENT PROJECTS.	PERFORMANCE OF RHYTHMS.		
	Boys will receive rubric.	Using made instruments, boys will perform rhythms		
Assessment				
Forms of Assessment			Assessment Activity/ies (Brief Explanation)	
<input type="checkbox"/>	Written Work	<input type="checkbox"/>	Data Handling	RUBRIC discussing what is expected of instrument project.
<input checked="" type="checkbox"/>	Presentations	<input type="checkbox"/>	Map Reading	
<input checked="" type="checkbox"/>	Demonstrations	<input type="checkbox"/>	OBE Tests	
<input type="checkbox"/>	Performances	<input type="checkbox"/>	Essays	
<input type="checkbox"/>	Journals	<input type="checkbox"/>	Debates	
<input type="checkbox"/>	Interviews	<input checked="" type="checkbox"/>	Oral	
<input type="checkbox"/>	Field Work	<input checked="" type="checkbox"/>	Art Processes	
<input checked="" type="checkbox"/>	Models	<input type="checkbox"/>	Projects	
<input type="checkbox"/>	Reading	<input type="checkbox"/>	Investigations	
<input type="checkbox"/>	Context Analysis	<input type="checkbox"/>	Exhibitions	
What Assessor will do		Who will Assess		Instrument Used
<input checked="" type="checkbox"/>	Observe	<input checked="" type="checkbox"/>	Teacher	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Listen	<input type="checkbox"/>	Self	<input type="checkbox"/>
<input type="checkbox"/>	Reading	<input type="checkbox"/>	Peer	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Interpret	<input type="checkbox"/>	Another Teacher	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Review	<input type="checkbox"/>	Outside Expert	<input type="checkbox"/>
<input type="checkbox"/>	Question	<input type="checkbox"/>	Class Panel	<input type="checkbox"/>
<input type="checkbox"/>	Confer	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/>	Interview	<input type="checkbox"/>		<input type="checkbox"/>

# Addendum J:

Music tracks used for musical activities

<b>Song title</b>	<b>Artist</b>	<b>Beats Per Minute</b>	<b>Album</b>
Ave Maria	Schubert	56	The Wedding Album
Goldberg Variations (BWV 988)	Bach	60	The Goldberg Variations
"Winter" from The Four Seasons	Vivaldi	60	The Four Seasons
Canon in D	Pachelbel	60	Amazon.com (MP3 download)
Hero	Mariah Carey	60	The Ballads
I believe I can fly	R. Kelly	60	Space Jam Soundtrack
Lemon Tree	Fool's Garden	72	Dish of the Day
South Hampton	James Horner	72	Titanic soundtrack
Wasting Time	Jack Johnson	72	En Concert
Here without you	3 doors down	72	3 Doors Down
I get around	Beach Boys	72	All Summer Long
Thank You	Dido	80	No Angel
Lullaby	Shawn Mullins	80	Soul's Core
Summertime	Gershwin	80	Porgy & Bess
Switch	Will Smith	100	Lost and Found
Eye of the Tiger	Survivor	110	Ultimate Survivor
Money, Money, Money	ABBA	120	Abbasolutely
Not falling apart	Maroon Five	120	It won't be soon before long
Teenage Dream	Katy Perry	120	Teenage Dream
Apologise	One Republic	120	The Fame
Poker Face	Lady Gaga	120	The Fame
Waka Waka	Shakira	125	Sale El Sol
Final Countdown	Joey Tempest	125	The Final Countdown
Viva la Vida	Coldplay	135	Viva la Vida