A STUDY OF THE INTEGRATION OF TECHNOLOGY IN THE SCHOOL ARTS CLASSROOM

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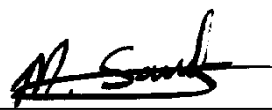Nelson Mandela Metropolitan University

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DECLARATION

I, Maxwell Martin Sauls (208076215), hereby declare that the thesis for Magister Musicae in Education is my own work and that it has not previously been submitted for assessment or completion of any postgraduate qualification to another University or for another qualification.

Maxwell Martin Sauls

Signature: _____   *Date:* _04_ / _12_ / _2015_

In loving memory of

Bianca-Anne Lillian Harper-Agherdien

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ABSTRACT

This study explores the use of Information and Communications Technology (ICT) and Educational Technology (ET) as an educational resource in the school Arts classroom. Many teachers lack the qualifications to teach the Performing Arts (PA) of the Curriculum and Policy Statement (CAPS). Therefore, teachers rely on curriculum documentation and textbooks to help guide planning of lessons and the execution thereof. Technology as a resource tool can assist teachers as they incorporate an overwhelming amount of content/concepts in lessons. In this way they could improve classroom practice in the PA disciplines.

With the emergence of *Operation Phakisa: ICT in Education* (Department of Education [DoE] 2015), the researcher acknowledges that the integration of ET is unavoidable. Moreover, the research highlights the importance of engaging with the rising hegemony of ICT as the defining characteristic of the *information society*. Literature supporting the inclusivity of media and media-related resources in education are discussed. In addition, the literature review focuses on a wide variety of ET and concludes with the implementation of ET in a South African context.

Teachers from the Foundation Phase (FP), Intermediate Phase (IP) and Senior Phase (SP), namely grade R – 7, were invited to participate in the study where they were observed during contact time drawing on technology to aid teaching pedagogy. The research design involved a qualitative inquiry with aspects of crystallization where the data was collected through observations, interviews and teacher's self-assessment.

The findings suggest that teachers received little or no training in one or more PA disciplines. The integration of technology in the teaching pedagogy led to an enhanced learning environment where the teacher could actively engage learners in meaningful activities. The findings furthermore revealed that the use of technology was not uniform and did not lead to neat conclusion. Instead the researcher found that a great deal of divergence in the use of technology. This divergence was found across art disciplines and the use of technology also differed among teachers. Finally, individual teachers also differed in their use of technology across the art disciplines that they taught.

The learners benefited from the use of technology insofar as they displayed a better understanding of the concepts in subsequent lessons. Furthermore, by the end of the study, teachers had begun to implement the new teaching style in learning areas other than the PA.

KEY WORDS

Educational Technology

Technology

Arts Education

Learning

Performing Arts

Integration

Chapter I

GENERAL ORIENTATION TO THE STUDY

"The arts are an essential element of education, like reading, writing arithmetic... dance, drama, music and visual art are all keys that unlock profound human understanding."

- William Bennett

1.1 INTRODUCTION

A paradigm shift in learning theory from behaviourist to social constructivist views of human cognition is occurring in education (Vygotsky 1978; Vygotsky 1997; Daniels 2005; Cutrim-Schmid & Whyte 2012). Indications of transformation through learning technologies are detectable yet teachers fail to approach education with a new perspective (Roschelle & Pea 2002; Laurilard 2008). Learners are creating study groups on *Whatsapp* and navigating electronic tablets as textbooks (Scherer & Cator 2011; Imazeki 2014).

The twenty-first century learner is highly rational and demands instant access to knowledge (Chayko 2008: 3-16; Cline 2014: 63-70). With the world literally at his/her fingertips through the use of technology, education challenges teachers to re-envision the role of technology in the classroom (Marsh 2005; Klopfer, Osterweil, Groff & Haas 2009: 1-20; John D. & Catherine T. MacArthur Foundation [JCMF] 2010: 1-17).

At present, learners are required to master more than the core curriculum in pursuit of success in the employment industry (Collis 2005: 215-217; Scherer & Cator 2011; Blair 2012). Transformation is taking place in first world countries where the traditional three R's of *Reading*, *Writing* and *Arithmetic* are being merged with the

four C's of *Critical thinking*, *Creativity*, *Communication* and *Collaboration* (Darby & Catterall 1994; Fogarty & Stoehr 2008: 23-42; Beschorner & Hutchison 2013). Latham and Gross (2014: 46-47) suggest that effective application of technological skills in the workplace requires acquiring the skills in a technology-infused learning environment during the scholastic period.

1.1.1 Research Statement

Teachers need sufficient training and experience in order to be effective in their profession (Willis & Raines 2001; Gall & Breeze 2007; Hanna 2008; DoE 2012d: 8-10). Teachers are not adequately trained and in many instances lack the qualifications needed to teach the Creative Arts (DoE 2012d: 9; Department of Basic Education [DBE] 2015a: 34). Teachers therefore rely on a wealth of resources to help guide the process of planning lessons and the execution thereof (Klopfer *et al* 2009: 3; Jones & Cuthrell 2011; Cennamo, Ross & Etmer 2014: 317-372). The research is aimed at acquiring a clear understanding of the lived experiences, skills and competencies needed to teach the Creative Arts (CA) and good teaching practices of teachers in the classroom. Moreover, the study seeks to address how technology can be used in a controlled environment to aid the teaching and learning process.

The purpose of this study is to explore the use of technology in the school Arts classroom and how it relates to the PA sub-learning area in CAPS. Furthermore, the study will explore the implications of the use of technology in the classroom as an educational resource.

1.1.2 Research Aim

The principle aim of the research study is:

- o To understand how the integration of technology with teaching methodology can facilitate the teaching and learning process in the FP, IP and the SP.

2

A secondary aim of the research study is:

- o To explore the usage of technology in the Creative Arts classroom.

1.1.3 Research Questions

Two themes will be explored within the framework of technology education.

- o How would teachers engage with the CA in the FP, IP and the SP if technology is introduced into teaching pedagogy?

- o How does technology foster professional development of teachers?

1.1.4 Research Objectives

The aims of the research will be achieved by:

- o Exploration through means of unstructured interviews, observations and literature written on educational technology.

- o Thematic analysis of the interviews and observations conducted.

- o Personal experience of the technologies encountered during the research study.

1.2 LITERATURE REVIEW

When challenged to embrace a new outlook towards twenty-first century education, most stakeholders would assert that it is arduous to bring about a significant change to the transmission of the curriculum. Lent (2012: 11-28) draws attention to the fact that teachers reflect on personal experiences and base their teaching philosophy on precedent events. Teachers favour adherence to conventional teaching

methodologies as they provide access to resource materials and avert personal creativity (Scheffler & Logan 1999; Roschelle & Pea 2002; Omolewa 2007).

Education coexists with other governmental sectors in South Africa yet has not adapted to commensurate lifestyle trends nor the skills needed for the employment industry (Scherer & Cator 2011; Blair 2012). The twenty-first century Arts curriculum is flexible, creative, challenging, multifaceted and does not conform to the conventional ideologies placed upon it (Haycock 1991; Jonassen 1994; Piirto 2011: 117-142). Wood and Attfield (2013: 55-56) maintain that it addresses the rapidly changing world filled with new problems as well as new possibilities.

1.2.1 Twenty-first Century Art Skills

Education encompasses the holistic development of learners (DoE 2012b: 8-9; DoE 2012c: 8-10; DoE 2012d: 8-10). The National Curriculum Statement (NSC) refers to development in all areas, including that of technology (DoE 2012a; DoE 2012b: 8). The skills learnt through Arts education are interdisciplinary, integrated and project-based in nature (Darby & Catterall 1994; Motluk 1997; Rauscher & Zupan 2000; Burton, Horowitz & Abeles 2000; Kassing & Jay 2003; McDonald & Fisher 2006).

These skills include:

- o Use language, text and symbols interactively
- o Use media tools interactively
- o Processing data and reporting results
- o Creating original works as a means of personal and group expression
- o Synthesising experiences coherently
- o Communicating ideas effectively to multiple audiences using a variety of media formats (See *Appendix A*)

Marsh (2005) points out that teachers engage with learners whose lives have been immersed in media culture. Learners are assimilating the world through the filter of computing devices: television (TV), cellular phones, handheld gaming devices, electronic tablets and laptops (Chayko 2008: 63-72; Wientjes 2011: 37; Imazeki 2014).

Children are acquainted with multimedia and technological devices. Beschorner and Hutchison (2013: 20–22) describe how children navigate these electronic apparatuses in which they are faced with complex tasks such as analysing, synthesising and problem-solving.

Popular cartoons aimed at learners aged 5 – 8 include *Dora the Explorer* and *Little Einsteins* (Gordon-Biddle, Garcia-Nevarez, Roundtree-Henderson & Valero-Kerrick 2013: 279). These educationally-based cartoons exploit the use of the computer model by presenting the narrative on a computer screen that mimics transitions, the movement of the mouse on the screen and computer tones (Beschorner & Hutchison 2013: 17-18).

1.2.2   The Twenty-first Century Arts Curriculum

The Arts curriculum integrates higher order thinking skills, technology, multimedia and the literacies of the present century (North Central Regional Educational Laboratory and the Metiri Group [NCRELM] 2003: 5; Organisation for Economic Cooperation and Development [OECD] 2005: 10-15; National Leadership Council for Liberal Education and America's Promise [NLCLEAP] 2007: 3; International Society for Technology in Education [ISTE] 2007). The curriculum is thematic and has many distinguishing characteristics, namely it is multidisciplinary, project-based and research-driven (Darby & Catterall 1994; Motluk 1997; Rauscher & Zupan 2000; Burton *et al* 2000; Kassing & Jay 2003; McDonald & Fisher 2006). Moreover, the Arts disciplines extend to incorporate the wider community which refers to building relationships between the local, provincial, national and global communities through

the use of technology (Owston 1997; White 2009; Blair 2012: 10 -11; Amensi & Akpomi 2013; Beauchamp & Kennwell 2013: 179; Hilmes 2014: 232-478).

Knowledge is constructed through research, personal experience and associations made with prior knowledge (Inhelder & Piaget 1958; Bandura 1977a; Bandura 1977b; Bandura 1993; Vygotsky 1978; Vygotsky 1997; Walls 2000: 16-19; Webster 2006; Franklin 2011: 201). Skills are acquired through research and application in projects (Haycock 1991; Klopfer *et al* 2009: 6). According to Ackerman and Perkins (1989: 77-95), the skills embedded in curriculum activities become relevant when applied within the context of the curriculum.

1.2.3 Technology in Arts Education

Technology was a key factor in the historical development of the Arts. It provided the tools, processes and materials that assisted artists in their creative expression (Kamien 2015).

Arts education utilises the symbols of visual and PA, giving humankind form and consciousness: music utilises note values, theatre makes use of story-telling, the visual arts draws on images and dance employs kinematic movement (Gardner 1983: 174-175; Sheehan & Mills 2008; Kamien 2015). Technology can assist teachers and learners to integrate an overwhelming amount of content thus enabling them to create, perform and respond to the disciplines respectively (Betcher & Lee 2009: 100-103; Sri & Krishna 2014). Walls (2000: 16-19) is of the opinion that each of the disciplines specialises in applied communication skills that are important in the corporate environment today.

Technology is a powerful tool that can improve education in the Arts if the integration thereof is completed systematically and implemented appropriately (Scheffler & Logan 1999; Koç 2005; Pitler, Hubbell, Kuhn & Malenoski 2007; Beauchamp & Kennewell 2010). Collis (2005) as well as Hooper and Rieber (1995: 154-155) emphasise that the effective use of technology transforms instructional content from

information to useful knowledge. Teachers and learners will be afforded the opportunity to access, analyse and apply information (Klopfer *et al* 2009: 1-20). Technology can improve academic achievement by addressing skills, assessment and motivation (Gibbons 2002: 110-131; de Freitas 2006; McCarrick & Li 2007; Ardoin 2009).

Technology has the potential to redefine learners' creative expression and understanding of the PA (Siegel 1995; Jalongo 1996; Chayko 2008: 3-16; Hutchison, Beschorner & Schmidt-Crawford 2012; Kirk & Pitches 2013; Kucirkova, Messer, Critten & Harwood 2014). It is therefore imperative that curriculum development units, school management teams, administrators and CA teachers develop a philosophy for the Arts curriculum that incorporates technology into the educational experiences (Scheffler & Logan 1999; Whitehead, Jensen & Boschee 2013: 21–24).

1.2.4   Change in Purpose and Objectives of Arts Education

As the objectives of Arts education change to reflect the needs of society so too ought the strategies for technological integration (Willis & Raines 2001; Gall & Breeze 2007; Lipstein & Renninger 2007: 114-118; Klopfer *et al* 2009: 3; Latham & Gross 2014: 46-47). According to the DoE (2012a) the purpose of education is to prepare learners for the employment industry in which they need a vast range of skills and competencies to compete with their peers.

Exposure to the Arts is no longer adequate; the performing and visual arts require study (DoE 2012b: 22-25, 34-37, 46-49 & 58-61; DoE 2012c: 12 – 14: DoE 2012d: 13-22). Methods of instruction require modification when technology is introduced into an educational setting (Hennessy, Ruthven & Brindley 2005; Lin, Esmahi & Poon 2005; Ware 2006; Flewitt 2008; Betcher & Lee 2009: 47-62; Twiner, Coffin, Littleton & Whitelock 2010; Beauchamp & Kennewell 2010). The School Management Team (SMT) will be required to evaluate the content and curriculum design of learning (DoE 2012a). Furthermore, assessment within the new framework will necessitate redesigning as the skills learnt through the new teaching strategies

are diverse (Scheffler & Logan 1999; Pitler *et al* 2007: 155; OECD 2013: 83-103; Cennamo *et al* 2014: 163-190).

Amongst the numerous objectives of the PA, development of problem-solving skills, meaningful decision-making and creative thought are of significance within the twenty-first century curriculum model (Darby & Catterall 1994; Scheffler and Logan 1999; Burton *et al* 2000; McDonald & Fisher 2006; JCMF 2010: 1-17). In addition, Arts education must support quality teaching with the latest advances in interactive technology (Doloughan 2002; Nelson 2009; Couse & Chen 2010; Bruce & Chiu 2015).

Clearly defined objectives will need establishment and assessment administered through a medium of technology conducive to that which is being assessed (Scheffler & Logan 1999; Pitler *et al* 2007: 155; OECD 2013: 83-103).

1.3 RESEARCH METHODOLOGY

The research study employs a qualitative approach. Immy Holloway (1997: 2), a writer on qualitative research states "*that* [this approach] *focuses on the way people interpret and make sense of their experiences and the world in which they live*". The researcher will use this paradigm to understand the social reality in which people live, explore their behaviours, perspectives and experiences. Furthermore, Holloway (1997) highlights the importance of the interpretation of the phenomenon being studied.

The rationale for selecting this approach is due to the researcher taking interest in teachers' interpretation of their experiences, construction of their worlds (Merriam & Tisdell 2015: 5) and how the instructional methods made use of in this study will improve their teaching pedagogy.

1.3.1 Research Design

Given the broad spectrum of approaches to qualitative research, the researcher chose to follow a phenomenological framework which focuses on experiential phenomena.

The research will follow a phenomenological design whereby it is understood that the meaning attributed by the participants is a description of the lived experience and the expression thereof (Van Manen 2010: 35-38). In research this denotes how experience becomes embedded in perception and the significance it carries (Newton-Suter 2012: 336). Creswell (2013: 24-25) states that the focus is on understanding the fundamental structure of the experience and interpretation of the meaning it has for the participants.

From an epistemological viewpoint, phenomenology is based in a paradigm of personal knowledge and subjectivity. It is these perspectives and interpretations that aids in gaining an understanding of the motivations and actions of people (Johnson & Christensen 2014: 49). Participants may express views, describe experiences and explain events/situations. The data collected will not be limited to a predetermined questioning framework and as a consequence can provide data that leads to focused descriptions of teaching experiences (Creswell 2013: 22).

1.3.2 Research Strategy

Participants will be sourced from one educational institution within the local education district. This institution has been identified because the researcher has built good relationships with the gatekeeper and interacts on a regular basis with the teachers at the institution (Boeije 2010: 32-33).

1.3.2.1 Accessible Population

Approximately three hundred and eight schools are located in the Port Elizabeth district. The total number of Life Skills teachers in the area is unknown due to the fact that this group is not stable. Instability is a result of a number of factors that include, (1) retirement, (2) shortage of teachers, (3) redeployment, (4) appointment of new teachers and (5) school principals moving teachers to different learning areas or subjects for operational purposes.

1.3.2.2 Sampling

The research design makes use of purposive sampling (Boeije 2010: 35). Participants will have a common characteristic, that is, at present all will be teaching Life Skills, moreover the Creative Arts syllabus.

The researcher will determine which units of analysis will be included in the study. They will be chosen due to the area of interest which best enables answering the research questions (Maxwell 2009: 235). A minimum of one teacher from each grade, namely grade R to grade seven, will be sampled.

Persons under the age of eighteen will not be included in the study. While conducting the observations, the researcher will observe the methods of instruction employed and the interaction between the teacher and the learners; with the teachers' actions and responses taking preference to that of the learner.

1.3.2.3 Rapport

Preceding the interview phase, the researcher will begin the development of rapport by elucidating the nature of the study. Dialogue will be used as a device to engage people on a personal level devoid of them feeling compelled to participate in the study (Johnson & Christensen 2014: 228). A relationship founded on trust needs to be established so that descriptions are a true reflection of the participants thoughts and feelings. Dickson-Swift, James, Kippen and Liamputtong (2007: 331-332)

believe that although complete trust will not be established from the outset, over time it will be gained.

1.3.3 Methods of Data Collection

The primary data will comprise of interviews and observations of the participants during contact time with learners (Merriam & Tisdell 2015: 137-161). The researcher will also become acquainted with the various technologies through use and incorporation in educational experiences. Sources of secondary data include books, journal articles and other published texts as these provide insight to the phenomenon being studied (Yin 2011: 129).

1.3.3.1 Interviews

The interviews will be unstructured, open-ended and conversational in format (Merriam & Tisdell 2015: 107-136). This approach will be employed to gain descriptions of the lived experience (Holloway 1997: 2). This data will be rich in detail, meaningful in social contexts and the significance of emotional engagement is a viable means of developing rapport (Dickson-Swift *et al* 2007: 330-332). Yin (2011: 136) suggests that participants be asked the same questions to uncover correlations between the lived experiences.

1.3.3.2 Observations

Fetterman (1998: 34-35) states that observation is an essential component in comprehending the perspective of the participant. A non-participant observation technique was selected as it limits interaction between the participant and the researcher (Johnson & Christensen 2014: 34-35). This method of data collection will examine the characteristics of technology-based instructional methods.

To gain a complex understanding of the phenomenon being observed, the researcher will use strategic improvisation to supplement the data collected.

1.3.3.3 Documents

Field notes will be created while conducting the observations. Annotations will aid in developing teaching strategies that will be employed during subsequent data collection (Maxwell 2009: 236). Furthermore, personal notes will guide the process of analysis as it provides a conceptual framework that will emerge during the data collection phase. Information of significance contained within the field notes will supplement the data collected during the interview and observation phases respectively (Kawulich 2005).

1.3.3.4 Audiovisual Equipment

The role of bodily-based behaviour in social contexts is indispensable to the meaning-making process. With the lack of visual data the researcher may not fully comprehend what transpires (Merriam 2002: 13).

Additionally, failure to capture the visual data necessitates compiling detailed field notes deterring from the experience and underlying nuances that could prove critical in the observations (Kawulich 2005).

Dickson-Swift *et al* (2007: 331-332) recommends recording the observed phenomenon as it provides a holistic view of the experience. Thus the researcher is able to listen and concentrate exclusively on the participant. This creates a better channel for rapport since the researcher will not be distracted by scribing field notes while the interviews are conducted.

1.3.4 Data Analysis and Interpretation

As defined by Merriam and Tisdell (2015: 361), the objective of analysis is to understand the phenomena by means of the data collected to create a detailed network of experiences through which the researcher seeks to uncover patterns and themes in order to draw conclusions from and answer the research question. The process entails coding the data so that similarities and dissimilarities can be

differentiated. Therefore, a method of identifying and coding the data needs to be developed to uncover the underlying processes involved in teaching and learning (Maxwell 2009: 236-237).

The data will originate from:

- o Interviews
- o Observations
- o Documents
- o Audiovisual material

Analysis of the data will first occur on a manifest level in which a descriptive account of the data will be methodically read. Thereafter, a latent level of analysis will be initiated. On completion of the latent analytical phase, an interpretive analysis that concerns the responses as well as inferences will commence (Julien 2008: 120-121).

While immersed in the process of data analysis, the researcher will emerge intermittently to identify and define emergent themes or topics (Merriam & Tisdell 2015: 343).

1.3.4.1 Transcribing

The interviews will be transcribed to obtain a written version of the proceedings. Silverman (2013: 255) expresses that by using this approach the lived experience is captured thus decreasing the risk of subjectivity.

1.3.4.2 Crystallization

In this study the researcher does not intend to seek a definitive truth as would be the case in the more traditional approach of triangulation. Instead the researcher recognizes that multiple and partial truths exist. Therefore, the adoption of crystallization gives voice to the multiple points of views that emerge (Ellingson 2009: 22).

1.3.4.3 Process of Analysing the Data

In order to organise these multiple voices, the researcher will proceed as follows:

1. Read the data collected through interviews and observations. Highlight the information according to the two themes.

2. Rewrite the information by grouping it according to the colour assigned to it. The information that is not highlighted will be reserved for review at a later stage.

3. Identify the subcategories within the larger categories by scrutinising the information and grouping texts which are similar.

4. Compare subcategories to establish dissimilarity or similarity between these constituents.

5. The information set aside for review will be examined and subsequently placed in a subcategory (Taylor-Powell & Renner 2003).

1.4 ETHICAL CONSIDERATIONS

1.4.1 Informed Consent

Prospective participants will be given clarity on the purpose of the research, data collection techniques utilised and the benefits of the research to their teaching practice (Cohen, Manion & Morrison 2011: 64-65). Moreover, the researcher will provide elucidation of *informed consent*. Furthermore, participants are free to withdraw from the research process at any stage during the interview and/or observation phase without providing a reason (McBride 2015: 92).

1.4.2 Anonymity

Participants will be reassured that information of a personal nature will not be made available to anyone who is not directly involved in the study. In addition, they will remain anonymous for the duration of the study. Participants are requisite to disclose information that they feel comfortable sharing. Finally, participants may provide verbal rather than signed consent on request (Merriam & Tisdell 2015: 264-265).

1.5 CONCLUSION

The literature review of this chapter has presented a basis for societal change primarily due to the advancement of technology. Education is the backbone of a country. Learners need to be educated in the best possible way with quality resources if excellence is to be attained.

Technology has the power to redefine learner's creative expression, comprehend the understanding of the PA and encourage learners to be active participants in the learning experience. The application of technology not only reevaluates what constitutes Art but is increasingly becoming an essential part of the evolving classroom practices. Teachers need to create new learning opportunities and not automate the existing curriculum.

The methodology employed seeks to answer the research question but from the perspective of the participants. The qualitative nature of the process encourages human interaction, so gaining an understanding of the lived experiences of the participants.

The themes identified in the analysis of interview data, observations and literature will allow for meaningful claims that are coherent and can be substantiated.

Chapter II

LEARNING THEORIES AND MODELS

"If a child is not learning the way you are teaching,

then you must teach in the way the child learns".

- Howard Gardner

2.1 INTRODUCTION

In understanding the human life we compartmentalise the various aspects of what it encompasses.

Schaffer (1996: 4) defines developmental psychology as *"the study of how individuals change over time and what factors produce* [those] *changes".* Thus the human life is subdivided into developmental periods: chronological age or biological indicators of development. Burman (1994: 9-19) holds to the view that subdividing the human life assists in understanding its complexities.

2.2 LEARNING THEORIES

Human beings attain knowledge, skills, values and attitudes through genetic and environmental factors. The acquisition of *knowledge*, *skills*, *attitudes* and *values* is known as **learning** (DoE 2012b: 8-12; DoE 2012c: 8-9; DoE 2012d: 8-9). The human body is a complex creation therefore different theories are developed in attempting to discover how one becomes knowledgeable (Fay 2001: 139-142).

2.2.1 Behaviourist Approach to Learning

In his book *Behavioral Views of Learning*, Woolfolk (2010: 206) describes the processes involved in behaviourism. The theory includes: *contiguity*, *classical conditioning*, *operant conditioning* and *observational theory*.

The concept of *contiguity* comes into effect when two sensations repeatedly occur simultaneously; over time it becomes associated with one another (Woolfolk 2010: 208). Subsequently, when one sensation arises the other will occur as well.

Classical conditioning focuses on the spontaneous emotional or physiological responses such as panic, increased muscle tension, salivation or perspiration (Newman & Newman 2006: 73-74).

Skinner (1953: 65) points out that one learns to conduct oneself in a certain way when operating in different environments. This learned behaviour is termed *operant conditioning*.

Learning by monitoring others is known as *observational learning.* One gains the knowledge of knowing how to behave and the consequences of actions (Bandura, Ross & Ross 1961).

2.2.2 Cognitive Developmental View on Learning

Jean Piaget was interested in how children come to understand the world around them (Sugarman 2001: 58). He viewed the child as a lone scientist, creating his/her own sense of the world. This view is supported by Newman and Newman (2006: 263-266) who refers to the construction of logic based on what is observed.

Piaget developed a comprehensive theory concerning epistemology; how human beings gradually come to acquire, construct and utilise it (Inhelder & Piaget 1958).

Pressley and McCormick (2007: 61-65) write that Inhelder and Piaget (1958) suggested that there are four stages of mental representation that a child ought to systematically progress through before attaining adult level thinking. Progression from one stage to another entails an increase in the quantity, quality and understanding of the information.

The four stages are known as the *sensorimotor period*, *preoperational period*, *concrete operational period* and the *formal operational period* (Siegler 1991: 26-38)*.*

2.2.2.1 Sensorimotor Period (birth to 2 years)

At birth infants' cognitive system is restricted to motor reflexes. However, as they mature they develop these reflexes and coordinate them into extended chains of behaviour.

2.2.2.2 Preoperational Period (2 years to 7 years)

During this stage children develop an egocentric perspective. Children acquire representational skills in the area of mental imagery.

2.2.2.3 Concrete Operational Period (7 years to 11 years)

At this point in their development children are able to adopt the perspectives of others. Although they can understand concrete problems, Inhelder and Piaget (1958) argue that they cannot yet comprehend problems of an abstract nature.

2.2.2.4 Formal Operational Period (11 years to adulthood)

Those entering the formal operation stage are competent of logical and abstract thought. In addition, they are able to reason hypothetically.

2.2.3 Socio-cultural View on Learning

Vygotsky (1978) believed that learning is directed by the social and cultural environment(s) surrounding an individual. Daniels (2005: 64-66) supports this claim and states that first the tools need to be granted to allow the development within an environment to occur. The tools are obtained through social interaction within the environment. The tools received are the body of knowledge - views and thoughts - and the way in which situations are approached (Cardwell & Flanagan 2003: 118-120).

2.2.3.1 Cultural Mediation and Internalisation

As children interact with members of society their elementary mental functions develop into complex mental processes (Cardwell & Flanagan 2003: 118). Through these interactions children become immersed in the culture, acquiring its values, learning its spoken and written language and attaining symbolic knowledge from which meaning is drawn. The aforementioned is referred to as *cultural mediation* (Evangelou, Sylva, Wild, Glenny & Kyriacou 2009: 78). The knowledge acquired through these cultural interactions is known as *internalisation* (Vygotsky 1997: 21-24).

2.2.3.2 The More Knowledgeable Other

Vygotsky (1978: 85-86) was of the opinion that development occurs through shared experiences. Sharing experiences with others includes any person who has a better understanding of a task, process or concept than that of the child. This idea has been further developed by Selwyn (2011: 132-136) in which he expresses that the concept of the *more knowledgeable other* (MKO) is not restricted to people but also includes technology that can serve as this purpose.

2.2.3.3 Zone of Proximal Development

The model of the MKO is associated with another key principle, namely, the *zone of proximal development*.

Vygotsky (1978: 86) writes that this concept is defined as "*the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under... guidance*".

There are two levels of attainment:

Level 1:   The present level of development

Level 2:   The potential level of development

The space between Level 1 and Level 2 is what Vygotsky (1978:86) referred to as the *zone of proximal development* (Daniels 2005: 22). It is only through assistance and guidance that level 2 is achieved.

Contractors make use of scaffolding to assist in the building process; Rathus (2005: 103) suggests that Vygotsky (1978) drew on this idea to introduce his concept of *scaffolding*. This refers to the assistance received between the levels. As the knowledge of the child increases so too must the amount of guidance decrease (Newman & Newman 2006: 39).

2.2.4   Social Learning Theory

Four centuries ago Albert Bandura (1977a) proposed that a combination of environmental and psychological factors influence behaviour. He drew on areas of research such as psychosis and behaviourism to develop the *social learning theory* (Bandura *et al* 1961).

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Three interlinked principles exist at the core of the theory. First, behaviour is learnt through observation. Second, *"internal mental states are essential* [to the learning] *process".* Third, behaviour modification as a consequence does not necessitate behavioural change (Bandura 2002: 121-153).

2.2.4.1 Motivation

In 1993 (:117–148) Bandura propounded an additional element: *motivation*. Motivation is the factor that stimulates the desire to attain success. Factors are deemed intrinsic or extrinsic. Intrinsic motivation refers to stimuli within an individual such as curiosity, interest and/or enjoyment of the task itself. The latter refers to motivation sought from external inducement such as money, coercion and punishment (Ursyn 2014: 109-111).

2.2.4.2 The Modeling Process

The following steps are utilised to ascertain whether social learning is successful or not (Bandura 1977b; Cardwell & Flanagan 2003: 146):

Step 1: Attention

To attain success attention must be given. Factors that deter from the learning experience should be eliminated.

Step 2: Retention

This entails being able to recall the object of attention. The ability to recall information and act on it is essential to observational learning.

Step 3: Reproduction

Demonstration of the observed behaviour is subject to success in being attentive and retaining the relevant information. Reproducing the behaviour leads to an improvement of the act of observation.

Step 4: Motivation

Positive and negative reinforcement assist in establishing appropriate behaviours or eliminating inappropriate behaviours.

2.2.5 Multiple Intelligences

It was a belief that human beings only had one type of intelligence. Howard Gardner questioned this idea. He viewed intelligence as "*the capacity to solve problems or...* [create products that are] *valued in one or more cultural setting*" (Gardner & Hatch 1989: 4). In his book *Frames of Mind* (1983), Gardner suggests that individuals' profiles of intelligence are the same; therefore restrictions within the traditional manner of ascertaining intelligence are present.

Gardner (1983) initially identified seven autonomous intelligences possessed by one individual. After the original seven intelligences were formulated, he explored the possibility of other intelligences that may be in existence. Gardner amended his seven intelligences to include an eighth (Gardner 1999: 48). One or more of these intelligences may be more dominant than the others, but no one is equally dominant across all. Moore (2015: 43-49) proposes that by making use of the intelligences as framework teachers can determine a learner's strengths and weaknesses.

The list of intelligences includes the *linguistic* intelligence, *logical-mathematical* intelligence, *musical* intelligence, *bodily-kinaesthetic* intelligence, *spatial* intelligence, *intrapersonal* intelligence, *interpersonal* intelligence and the *naturalist* intelligence (Gardner 1999: 27-46).

2.2.5.1 Linguistic Intelligence

Includes the functions of words, effective use of symbolic language to express oneself, the transfer of information through reading and writing, sensitivity to the spoken word and underlying nuances (Gardner 1999: 41).

2.2.5.2 Logical-mathematical Intelligence

Involves the capacity to analyse problems logically or numerically, make use of algorithms and investigate phenomena scientifically. Gardner (1999: 42) states, that this intelligence *"entails the ability to detect patterns* [and] *reason deductively*."

2.2.5.3 Musical Intelligence

Entails the skills utilised in performance, composing and appreciation of music (Gardner 1999: 42).

2.2.5.4 Bodily-kinaesthetic Intelligence

Making use of mental faculties to coordinate bodily movements, be it the whole body or part thereof, to solve problems or create movement sequences (Gardner 1999: 42).

2.2.5.5 Spatial Intelligence

The ability to represent the world from a dimensional and structural viewpoint (Gardner 1999: 42).

2.2.5.6 Intrapersonal Intelligence

It concerns itself with self-awareness and the ability to understand ones' own emotions, goals and motivations (Gardner 1999: 43).

2.2.5.7 Interpersonal Intelligence

It enables the development of cooperative relationships amongst individuals (Gardner 1999: 43).

2.2.5.8 Naturalist Intelligence

The ability to differentiate among living organisms and display sensitivity to features of the natural world. Moreover, demonstrating a greater ease in caring for and interacting with animals (Gardner 1999: 48).

2.2.6 Music Learning Theory

Learning often occurs in an informal setting since the skills involved in learning the discipline are not imposed on an individual (Gordon 2007: 260). This theory is a description of the acquisition of music while interacting with the discipline itself.

2.2.6.1 Preparatory Audiation

There are three types of preparatory audiation: *acculturation*, *imitation*, and *assimilation*. Seven stages of learning are embedded within this configuration (Gordon 2000; 2001; 2003; 2007).

Type I: Acculturation

Due to the insufficient development of the brain, infants are unable to engage in extended periods of concentration. They are aware of environmental sounds yet respond with ineffectual responses (Gordon 2007: 251–260).

- o **Stage 1: Absorption** - Infants absorb music by listening to tonalities, harmonies, meters and rhythmic variations (Gordon 2008: 90).

- o **Stage 2: Random response** - Children make an array of babble sounds in conjunction with movements (Gordon 2003: 60).

- o **Stage 3: Purposeful response** – Toddlers are encouraged to participate in singing tonal and rhythmic patterns. They imitate the perceived musical strain; though accurate repetition is not anticipated (Gordon 2011: 6).

Type II: Imitation

As children develop musically so too will their musical interactions become more purposeful.

- o **Stage 4: Shedding egocentricity** - After hearing a musical pattern a child will attempt to imitate what was heard but the imitation will be incorrect. The teacher should reproduce the pattern of the child rather than correct it. In due course, the child will learn to discriminate between what he/she has performed and the correct musical pattern (Gordon 2001: 69).

- o **Stage 5: Breaking the code** - Children develop the ability to perform tonal and rhythmic patterns with accuracy. The teacher assists in this process by reproducing the child's inaccurate pattern then repeating the pattern correctly. In time, children will model this behaviour and the incorrect responses will be followed by correct responses (Gordon 2001: 70).

Type III: Assimilation
Assimilation encompasses the ability to internalise and understand musical phrases.

- o **Stage 6: Introspection** - Children acquire the skill of self-evaluation. Through self-discovery children ascertain that the sung patterns are uncoordinated with the movements. This is climacteric to the ongoing development taking place. Personal coordination must first occur before coordinating musically with others (Bluestine 2000: 105; Gordon 2003: 99-100 & 104).

- o **Stage 7: Coordination**. In the final stage of development, children attain the skill to coordinate their singing with muscular movements and breathing. They are able to be trained in audiation as they listen to, perform, read, write, create and improvise music (Gordon 2003: 9-17).

A tabular illustration of the *music learning theory* is presented on the following page.

Table 2.1   Stages of the Music Learning Theory

Type	Stage
Acculturation **(birth to age 2)**	**Absorption**: Aurally absorbs environmental sounds consisting of music.
	Random response: Responds to the inference of musical sounds in the environment through movement and babble.
	Purposeful response: Attempts to imitate the perceived tonal and rhythmic patterns of music.
Imitation **(age 3 to age 4)**	**Shedding egocentricity:** Recognises that imitation is dissimilar to the aurally perceived musical pattern.
	Breaking the code: Imitates the tonal and rhythmic patterns of music with a certain degree of accuracy.
Assimilation **(age 5 to age 6)**	**Introspection:** Recognises the lack of coordination between singing movement
	Coordination: Coordinates singing and breathing with movement.

(Adapted from Gordon 2007: 256)

2.2.7 The Information Processing Approach

This theory utilises the computer model as a representation for human learning. Woolfolk (1990: 130 & 258) suggests that the human brain has the ability to encode, retain and retrieve information from its stored location. Learning is approached through the study of memory (Sternberg 2009: 539).

Sternberg (2009: 197-199) identifies three types of memory, namely:

- Sensory registers - The sensory organs receive the stimuli and translates it into information.
- Short-term memory - Provisional retention of information occurs unless an event of significance arises in which information is retrieved. If no such event comes to pass the brain discards the information.
- Long-term memory - Information is retained indefinitely and may be retrieved as required.

Plunkett, Banerjee and Horn (2010: 345) assert that successful encoding of information is determined by ensuring that material is of significance "*and that activation of prior knowledge occurs. Strategies for assisting encoding include*[s] *chunking",* rehearsal, imagery, mnemonics and schema activation.

2.2.7.1 Cognitive Load Theory

Cognitive Load Theory (CLT) is adapted from the information processing theory for use in designing educational experiences (Sweller, van Merrienboer & Paas 1998). When applying CLT to the design of instruction, it is essential to distinguish the various components of the instruction (Paas & van Merrienboer 1994). CLT proposes the separation of information into three parts: Intrinsic Load (IL), Extraneous Load (EL) and Germane Load (GL). IL is the portion of the task the curriculum designer considers to be the objective of the lesson. EL is the cognitive load placed on the learner by the instructional strategy employed. Paas, Renkl and Sweller (2003: 250-255) state that the combination of the IL and EL is described as the Mental Load (ML) on the learner's working memory. If the effort assigned to the

task exceeds the ML the additional working memory of the learner is the GL (Sweller, van Merrienboer & Paas 1998; Cheng & Chau 2009: 338).

2.3   LINKING LEARNING THEORIES TO THE PERFORMING ARTS

Implementation of the PA commences at school level (DoE 2012a). South Africa has adopted a model that integrates the discipline(s) into the General Education and Training (GET) phase of educational instruction (DoE 2012b: 6-7; DoE 2012c: 6-7; DoE 2012d: 6-7).

2.3.1   Performing Arts and Behaviourism

2.3.1.1   Observation and Rote Learning

A research study (Hanna 2008) conducted less than ten years ago concludes that learning by observation in conjunction with imitating kinematic movement results in the most accurate method of learning. Bandura (1977b) supported by Bonanno and Kommers (2008: 102) suggest that observation combined with physical practise engages muscle memory which is more beneficial than observation alone.

During dance instruction the skills of observation and rote learning are employed (Bucek 1992; Cardwell & Flanagan 2003: 146; Evangelou *et al* 2009: 58; Woolfolk 2010). The teacher is required to be sufficiently trained in the discipline (DoE: 2012d: 13-14). Learners will be modelling their movements (behaviour) on what is observed; therefore Hanna (2008) suggests that experts in the field are needed to ensure that the movements are correct and that learners are modelling the correct behaviour from the onset.

2.3.1.2   The Law of Contiguity

Adequate stimulus across the PA creates a learning environment that promotes opportunities for engaged and active cross-disciplinary learning experiences (Catterall 2002; Motluk 1997; Rauscher & Zupan 2000; Burton *et al* 2000; Kassing &

Jay 2003; McDonald & Fisher 2006). Reciprocal relationships occur between the PA disciplines, with activities often challenging one another (Gardner 1999: 41-42; Kamien 2015). Kassing and Jay (2003) describe how an enhanced environment as previously mentioned is fundamental to academic achievement.

2.3.2   Performing Arts and Cognitive Development

2.3.2.1   Cognitive and Affective Development

Affective development entails the increased interest in learning and the feeling of self-worth, which in turn increases willingness to learn and applying new skills (Gibbons 2002: 106-109; Pitler *et al* 2007: 155; Ardoin 2009: 57-77; Glazzard, Benby & Price 2014). As teachers expose learners to the various PA disciplines, so too will the learner's motivation and enthusiasm for learning increase (Bandura 1993:117–148; Pitler *et al* 2007: 155; Keller 2010: 75-96; Mattar 2013).

In *Critical Links*, Catterall (2002) proposes that the variables of cognitive development and affective development occur simultaneously. When applied academically it results in successful acquisition of knowledge and skills (Jonassen, Peck & Wilson 1999; Smaldino, Lowther, Mims & Russell 2014; Hull & Katz 2006; Beauchamp & Kennewell 2010).

2.3.2.2   Left Brain versus Right Brain Dominance Theory

The human brain consists of two hemispheres: the right and the left hemispheres respectively. The *left brain versus right brain dominance* theory proposes that individuals rely on one hemisphere more than the other to process information. Although there is a natural tendency to think in a certain way, be it logical or creative, the two hemispheres work simultaneously. The difference is that each hemisphere processes the stimulus differently (Turgeon 1994: 15-17; Springer & Deutsch 1997; Sheehan & Mills 2008; Mattar 2013).

LEFT HEMISPERE	RIGHT HEMISPHERE
Logic	Creativity
Sequencing	Imagination
Language	Non-verbal cues
Facts	Feelings
Words of songs	Tunes of songs

The left hemisphere is responsible for verbal, analytical and sequential thinking while the right hemisphere is non-verbal and intuitive (OECD 2007).

Cognitive enhancements exist in the following:

o Instruction in drama leads to an improvement in memory due to manipulation of semantic information.

o Learners schooled in theatre performance implement retention strategies for attention; these skills may be transferred to other cognitive functions involving memory.

o Musicians apply strategies of retention to maintain information in their short-term and long-term memories (Gazzaniga 2008).

2.3.3 Performing Arts and Multiple Intelligences

Multiple Intelligences refers to the use of a wider range of instructional strategies to cater to the eight intelligences (Gardner 1983, 1993, 1999; Gardner & Hatch 1989). Varied teaching methodologies engage more learners since individuals have unique ways of learning (Fleming & Mills 1992; Campbell, Campbell & Dickinson 2004; Lin *et al* 2005; Fogarty & Stoehr 2008: 6-22; Reedy 2008; Kuhn 2008; Flewitt 2008).

2.3.3.1 Dance

Dance employs the *spatia*l and *bodily-kinesthetic* intelligence (Gardner 1999: 42). Spatial intelligence is used in movement across spaces giving control to self-orientation and balance (Gardner 1983: 174-175; McKenzie 2005). Abstractly, dancers create feelings of tension with their bodies; creating a correlative relationship with the bodily-kinesthetic intelligence, in which gross motor skills are manipulated to create feelings, emotions or personalities (Bucek 1992; Gardner 1999: 42; Kassing & Jay 2003; Hanna 2008; National Dance Association 2010).

2.3.3.2 Drama

Drama utilises several intelligences due to the overlapping of characteristics (Gardner 1983; Gardner 1999: 41-43). *Linguistic* Intelligence is highlighted in this discipline since the sensitivity to spoken word and the meaning of words are of importance (Gardner 1999: 41; National Research Council [NRC] 2000: 79-113; D'Amico & Gallaway 2010: 20; Hutchison *et al* 2012). The simultaneous use of words and action conveys information in a meaningful way (Skinner 1953: 65; Siegel 1995; Sheehan & Mills 2008; Young, Long & Myers 2010; Kirk & Pitches 2013; Kucirkova *et al* 2014).

2.3.3.3 Music

Music intelligence is associated with music education (Gardner 1999: 42). Music in itself is a highly structured art form (DoE 2012d: 17-20; Kamien 2015). Elements of music such as pitch, rhythm, dynamics, timbre and duration are studied (DoE 2012b: 12-13; DoE 2012c: 17-20). Notably, the profound emotional effect it has on the individuals listening to it and those performing music itself (Bandura 1993:117–148; Montello 1999; Pitler *et a.* 2007: 155; Collins 2008).

2.3.3.4 Cross-disciplinary Relationships

The PA trains learners to solve problems, elaborate ideas, and to structure and organise different kinds of experiences (Siegel 1995; Doloughan 2002; Koç 2005: 4; Nelson 2009; DoE 2012c: 12-13; DoE 2012d: 13-22; Kirk & Pitches 2013). Burton *et*

al (2000) argue that skills, such as the aforementioned, are transferable to the Sciences, Mathematics and Language Studies.

In support of Darby and Catterall (1994), Motluk (1997), and Rauscher and Zupan (2000), Burton *et al* (2000) develop this belief and propose that cross-disciplinary relationships exist among the following:

- o Drama develops higher-order language and literacy skills
- o Music enhances instruction in language
- o Music augments mathematical thought
- o Music and dance enhance spatial reasoning
- o Drama increases interpersonal relationships and communication skills

2.3.4   Performing Arts and Information Processing

The PA exploits the use of rehearsal as a mechanism to ensure maximum retention of information. In addition to the three types of memory (Sternberg 2009: 197-199), individuals in the PA make use of other types of memory as well (Jonassen 1994; Smaldino *et al* 2014; Burden & Atkinson 2007; White 2009). The PA teacher requires that learners develop these memories as they prove useful when performing (Schultz, Pitts & Kamery 2004).

The types of memory employed by performers are:

- o Kinesthetic memory: Recalling bodily movements in relation to others and/or instruments.
- o Tactile memory: The feel of a prop or the roughness of guitar strings.
- o Auditory memory: The sounds heard when a song is rehearsed or word is spoken.
- o Visual memory: The artefacts one is presented with be it a script, sheet music or observations from a dancer (NRC 2000: 79-113).

2.4   LINKING LEARNING THEORIES TO EDUCATIONAL TECHNOLOGY

Koç (2005: 4) writes that "*the integration of technology into education means using it as a tool to teach subject matter and to promote problem-solving and higher-order thinking skills. It is neither computer literacy nor computer awareness*". It refers to the use of technology as a medium to support the learning goal (Hennessy *et al* 2005; Jewitt, Moss & Cardini 2007; Beauchamp & Kennewell 2010; Lou & Lei 2012; Moore 2015). A similar stance is taken by Scheffler and Logan (1999) who emphasise the integration of technology as research, analysis of data, application and representation of knowledge, communication and collaboration.

2.4.1   Behaviourism and Educational Technology

Orey (2001) holds to the view that changes in behaviour is consequential to the stimulus-response associations made by the learner. By introducing the concept of positive reinforcement, the teacher will increase the learners "*understanding of the "relationship between effort and achievement by addressing their attitudes and beliefs about learning*" (Pitler *et al* 2007: 57).

2.4.1.1 Practical Examples of the Behaviourist Approach to Educational Technology

Teachers ought to employ strategies which seek to give learners systematic exposure to technology in order to impact their achievement through the effort exerted (Collis 2005; Pitler *et al* 2007; Klopfer *et al* 2009: 1-20; JCMF 2010: 1-17; Blair 2012: 10; Snyder 2013; Imazeki 2014; Cennamo *et al* 2014: 2).

Spreadsheets

The teacher designs a spreadsheet in which learners keep a record log of their own results. In addition, after analysis of the data, each learner could create a personal improvement plan for the remainder of the year. Through this exercise, learners are conditioned to recognise the importance of applying oneself to ones academics (Haycock 1991; Siegel 1995; Ardoin 2009; Kirk & Pitches 2013).

Educational Games

Educational games facilitate reinforcement of the concept(s) learnt at school (Can & Cagiltay 2006: 309; de Freitas 2006). Interactive games are programmed to provide the learner with immediate feedback. In essence, the learner not only receives immediate feedback but is granted multiple opportunities to succeed (Klopfer, Squire & Jenkins. 2002; Klopfer & Squire 2008). Moreover, games contain visual and auditory stimulation which provide the learner with positive reinforcement before advancing to the next level (Smaldino *et al* 2014: 328; Couse & Chen 2010: 67 – 77; Beschorner & Hutchison 2013).

2.4.2 Cognitive Development and Educational Technology

Exponential growth has been observed in the operation of technology by children (Jonassen 1994; Marsh 2005; Wientjes 2011: 37; Beschorner & Hutchison 2013: 17-18; Imazeki 2014). In doing so, children construct their own knowledge through interaction with this medium (Pitler *et al* 2007; Klopfer *et al* 2009; Ruzic 2011). As technologies are used in cognitive processes, it impacts the way information is thought of, furthermore, affecting the very nature of cognition itself (Brown & Cole 2000; Roschelle & Pea 2002; Spelke 2008; Plunkett *et al* 2010).

Learning is a process through which learners actively build an understanding of the world based on their experiences (Skinner 1953; Bandura *et al* 1961: 575-582; Vygotsky 1978; Vygotsky 1997; Sugarman 2001: 58; Bandura 2002: 121-153; Daniels 2005; Newman & Newman 2006: 263-266; Woolfolk 2010). Technology can be viewed as opportunities for learners to create, experiment and explore (Klopfer *et al* 2002; Can & Cagiltay 2006; Pitler *et al* 2007; Klopfer *et al* 2009; Cennamo e*t al* 2014: 53-136; Tabusum, Saleem & Batcha 2014). Subrahmanyam, Kraut, Greenfield and Gross (2000), Mercer, Hennessey and Warwick (2010), Lou and Lei (2012) concur that when used appropriately, technology can support and extend learning to increase educational opportunities.

2.4.2.1   Practical Examples of the Constructivist Approach to Educational Technology

Successful technology-based instruction requires the teacher to utilise adaptable teaching methods (Pitler *et al* 2007; Reedy 2008; Warschauer 2008; OECD 2013: 83-103).

The Personal Computer

Games are designed to emphasise visual information processing (Subrahmanyam *et al* 2000: 128). Gaming which involves rapid movement and high-definition imagery improves visual intelligence skills (Couse & Chen 2010). The skills acquired through this medium are transferable to areas such as Science, where the propensity to manipulate images proves essential (Subrahmanyam *et al* 2000: 128).

Discovery Learning

Technology creates the ideal opportunity for learners to be in control of their own learning; thus the teacher takes on the role of facilitator (Haycock 1991; McCarrick & Li 2007: 82). In addition, the developmental software fosters active engagement in the experience which allows for a greater degree of control over their environment (McCarrick & Li 2007: 76; Taylor & Robinson 2009).

2.4.3   Social Learning and Educational Technology

Woolfolk (2010: 208) notes that it is important to differentiate between *social learning* and *social media*: although social media can be utilised as a resource to support social learning.

2.4.3.1   Practical Examples of Social Learning and Educational Technology

Numerous opportunities exist to enhance learning through online social interactions (Owston 1997; Scherer & Cator 2011; Blair 2012: 10 -11). Global networking and interaction through gaming as a group are strategies that can be explored to enhance social learning (Harding-Smith 1993; Brown & Cole 2000: 208; Can & Cagiltay 2006).

2.4.4 Multiple Intelligences and Educational Technology

Kuhn (2008: 19) explains that by integrating technology into the curriculum, teachers are able to differentiate instruction to meet the needs of each learner's preferred learning style with suitable and systematic depth.

Through the use of media, the teacher creates an opportunity for learners to construct knowledge using their dominant intelligence(s) as a platform for technology-infused learning (Gardner 1983, 1993, 1999; Gardner & Hatch 1989; Campbell *et al* 2004; Reedy 2008; Kuhn 2008; Franklin 2011: 201). These experiences affords learners the opportunity to comprehend subject matter and develop the skills associated with the learning area (Jalongo 1996; Collins 2008; Kucirkova *et al* 2014).

2.4.4.1 Practical Examples of Multiple Intelligences and Educational Technology

Linguistic Intelligence
Teachers in conjunction with learners make use of a mobile application (APP) known as *Edumodo* to discuss homework and assignments.

Logical-mathematical Intelligence
Technology integration into this intelligence is accomplished through the use of computerised mathematical games. Games that entail mental Mathematics to uncover and understand symbolic and numeric patterns.

Musical Intelligence
By utilising composition software such as *Sibelius*, *Musescore*, *Finale* and *Noteflight,* the teacher is able to link musical concepts to theory. Reinforcement is provided since aural feedback is a standard feature of these software programs.

Bodily-kinesthetic Intelligence

The teacher that caters to learners with a preference for this intelligence will benefit most by interacting with three-dimensional objects. Operating Systems (OS) include software to edit video clips. The teacher can provide learners with an array of video clips which they can edit as desired.

Spatial Intelligence

Video and photography projects can be assigned to learners whom the teacher feels will benefit from this learning experience.

Intrapersonal Intelligence

The teacher can design an e-journal which learners could utilise to engage in self-reflection highlighting feelings, experiences and overcoming personal challenges.

Interpersonal Intelligence

Interpersonal relationships are established through collaboration. The teacher can assign a project such as making a documentary of a social issue, to a larger group.

Naturalist Intelligence

Learners acquire knowledge through personal encounters with the world around them. Learners can collect recyclable materials and incorporate these into tasks such as making a musical instrument and/or making use of found materials as props in a performance.

2.4.5 Cognitive Load Theory and Educational Technology

2.4.5.1 Practical Examples of Cognitive Load Theory and Educational Technology

Malone (1980) proposed that games challenge, incorporate fantasy and elicit curiosity. Games that challenge and encourage curiosity fall within the desirable difficulty. The gaming the teacher allows the learner to engage in ought to encompass a degree of difficulty, challenging the learners' mental faculties (Klopfer

et al 2002; Klopfer & Squire 2008; Klopfer *et al* 2009). If an optimal level of informational complexity has been reached then the learner will learn from the experience (Paas & van Merrienboer 1994; Sweller *et al* 1998; Paas *et al* 2003).

2.5   CONCLUSION

During the 1980's Bork (1985: 170) suggested that "*the home computer may become the primary influence upon the educational system of the future*". The evolution of the personal computer (PC) broadened society's vision of the device making its transition from a gaming console to a resource providing enhanced learning experiences in schools (Subrahmanyam *et al* 2000: 128; Collis 2005; Snyder 2013; Tabusum *et al* 2014; Imazeki 2014).

Arts-based instruction can be used as a vehicle for a broad range of learning experiences. It provides a way to view the world through an aesthetic framework (Kamien 2015). Learners understand the qualities of the world around them, learn to judge and compare these qualities. Through this filter they are able to comprehend the complex relationships among them (Burton *et al* 2000).

The use of technology must support the two essential premises of education: Assist teachers to design instructional activities based on the particular needs of the individual (Lin *et al* 2005; Reedy 2008; Fogarty & Stoehr 2008: 43; Flewitt 2008) and empower learners to take responsibility for their own learning (Haycock 1991; McCarrick & Li 2007: 82).

Teachers need to be empowered in the utilisation of technology and the integration thereof (Hooper & Rieber 1995). Educational technology ought to enable fewer resources to be sought out by the teacher. Moreover, the adoption of technology should form part of a lesson and not completely eliminate methodological practices (Hennessy *et al* 2005; Koç 2005; Lawless & Pellegrino 2007; Blair 2012; Cennamo *et al* 2014: 361-372).

Chapter III

THE TWENTY-FIRST CENTURY ARTS CLASSROOM

"Those who cannot remember the past are condemned to repeat it."

- George Santayana

3.1 INTRODUCTION

The technology made use of in the classroom has evolved since its inception in the late 1800's (Bain 1937). As suggested by Klopfer *et al* (2009: 3), since technology is becoming more visible in the educational setting, so too does the demand for teachers to find effective and purposeful methods of instruction.

A disparity in the skills acquired at school and those needed by the envisaged working-class citizen is evident (Collis 2005: 215-217; Scherer & Cator 2011; Smagorinsky 2012: 197; Blair 2012: 9-10; DoE 2012a; Latham & Gross 2014: 46-47). Du Plessis, Marais and Van Schalkwyk (2013) inform us that it is essential for education to adapt and modify to the transforming world in which we live. Teachers are expected to create dynamic learning environments while learners are afforded the opportunity to interact with technological devices (Marsh 2005; Klopfer *et al* 2009; Wientjes 2011: 37; Imazeki 2014).

As technology integrates further into society, it is paramount for teachers to acquire the proficiencies required to teach the Arts curriculum (Willis & Raines 2001; Gall & Breeze 2007; Hanna 2008, DoE 2012a; DoE 2012d: 8-10). Teaching in the twenty-first century necessitates more than an understanding of pedagogical and content knowledge (Laurilard 2008; Beschorner & Hutchison 2013; Wood & Attfield 2013: 55-56). These two aspects prove essential, yet how the body of knowledge is

transferred using the suitable technological instrument(s) must be considered in each situation (JCMF 2010; Blair 2012: 9-10). Cennamo *et al* (2014: 83-108) describe how technology is used to provide meaningful learning experiences, moreover, how it can support the teaching and learning process.

3.2   TWENTIETH CENTURY VERSUS TWENTY-FIRST CENTURY EDUCATION

3.2.1 Traditional Education

A teacher-centred approach is the focal point of conventional education (Oliva & Gordon 2013: 251). Teachers are the instruments through which knowledge is communicated and the standards of behaviours enforced (Skinner 1953: 65). The aim of this fundamentalist perspective is that education is a diffusion of a body of knowledge, furthermore, a set of facts, skills and acceptable societal morals and values obtained from the teacher (Dewey 1938: 1-5).

3.2.1.1 Characteristics of Traditional Education

The following is indicative of traditional education:

- o The main objective is to attain high test scores
- o Generic material taught to all learners
- o Teaching methodology is designed to suit the teacher
- o The materials made use of are text-based
- o Memorisation of facts
- o Progression is based on knowledge acquired over a period of time
- o Interaction between the learners is minimal
- o No cross-curricular connections made between subjects (Omolewa 2007).

3.2.2   Twenty-first Century Education

Blair (2012: 9-10) asserts that the effective application of skills in a technology-infused workplace requires acquiring these skills in a learning environment permeated with technology. Two elements are of importance for successful technology integration: (1) increased exposure to technology in the learning environment; (2) confidence that learners will utilise technology effectively to enhance the learning experience.

3.2.2.1   Shift in Roles

The former mindset was that at the centre of the learning experience was the teacher; therefore the individual acted as a learning catalyst. Effective activities take the forms of *discovery* and *creation*, though they often share a symbiotic relationship (Jonassen 1994; Jonassen *et al* 1999; Cutrim-Schmid & Whyte 2012; Kucirkova, *et al* 2014). Consequently, through these forms of learning the learner becomes the focus in the learning experience, taking on the roles of explorer, scientist and designer (Haycock 1991). By allowing learners to be educated through self-discovery, indicates that teachers believe in their learners' abilities and validate the contribution made by each individual.

3.2.2.2   Discovery and Exploration

The teacher creates opportunities for learners to be engaged in activities that are enhanced through the use of technology, research that is conducted using the World Wide Web and communicative media that enables learners to explore unanswered questions (Pitler *et al* 2007; Klopfer *et al* 2009: 1-20; JCMF 2010: 1-17). The teacher that permits activities based on discovery and exploration presents learners with real-world experience (Can & Cagiltay 2006; Scherer & Cator 2011). As a result, learners take ownership of their learning; using their experience as prior knowledge in subsequent lessons (Reedy 2008; Blair 2012: 10-11; Imazeki 2014).

3.2.2.3 Creation and Design

The teacher develops activities that involve originality and critical thinking skills (DoE 2012c: 12-13; DoE 2012d: 14, 16 & 19; Beschorner & Hutchison 2013). Learners become an active agent in constructing learning experiences (Ackerman & Perkins 1989; Haycock 1991; Darby & Catterall 1994; Cheng & Chau 2009). Keller (2010: 255-266) is of the view that when teachers allow learners to demonstrate a wide range of competencies, the learners become self-confident and gain intrinsic motivation.

3.2.2.4 Authentic Audiences

Traditionally, learners have produced products for a teacher. With the use of technological resources to establish authentic audiences, the teacher provides positive reinforcement by communicating to learners that their outputs are worth viewing and reading (Fralinger & Owens 2009; Berk 2009: 10-14).

Authentic audiences occur in an array of forms — the school newsletter, websites, film festivals, blogs, contests and to Skype with audiences from around the world (Blair 2012; Owston 1997).

3.2.2.5 A Device for Every Child

With the potential of a global library at the fingertips of learners, teachers have a responsibility to harness the power of technological resources (Scherer & Cator 2011; Agyei & Voogt 2011; Lou & Lei 2012; Imazeki 2014). To maximise these opportunities, teachers are required to expose learners to quotidian activities encompassing technology (Kuhn 2008). Unfortunately, with variable governmental school budgets it is impossible to impose the twenty-first century Arts teaching model on schools with the limited resources at the disposal of the teacher (DBE 2015a: 17 & 68-71; DBE 2015b: 43).

Affordable handheld devices are becoming increasingly popular. Snyder (2013:39) supports the view held by Collis (2005: 221-222) and states that by combining technology with the multitude of free educational Web 2.0 sites, APP's and non-

subscription fee websites; it is feasible to supply educational institutions with a source of technological tools and multimedia devices.

Below is a tabular representation of the difference between twentieth century education and twenty-first century education.

Table 3.1   Traditional Education versus Twenty-first Century Education

Twentieth Century classroom	Twenty-first Century classroom
Teacher-centred	Learner-centred
Time-based	Outcomes-Based
Knowledge obtained from textbooks	Knowledge is constructed through research
Assimilation of information through the senses	Assimilation of information through active engagement
Learners are separated from one another	Learners collaborate with classmates
Curriculum is separated into individual learning areas with no connections made between subjects	Curriculum is integrated across learning areas
Diversity is generalised	Curriculum and teaching methodology addresses diversity
Curriculum is taken out of context	Connections are made to real world experiences
Print is the method of learning and evaluation	Media, projects and demonstration of practical skills are used for instruction and evaluation
Focuses on the three R's – *Reading, Writing* and *Arithmetic*	Focuses on the integration of the four C's – *Critical thinking, Creativity, Communication* and *Collaboration*

(Adapted from Oliva & Gordon 2013: 251)

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3.2.3 Characteristics of Twenty-first Century Arts Education

The twenty-first century Arts classroom is equipped with paraphernalia conducive to the new learning environment. Moreover, provision is made for the various learning styles (Fleming & Mills 1992; Gardner 1999; Lin *et al* 2005; Kuhn 2008; Fogarty & Stoehr 2008: 21-43). From this contemporary model, the teacher creates opportunities for learners to gain the knowledge and skills needed to attain success in the workplace (Collis 2005: 215-217; DoE 2012a; Blair 2012).

3.2.3.1 Learner-centred

A learner-centred environment places the interests of the learners first and focuses on individual needs, abilities and learning styles (Gardner & Hatch 1989; Moore & Hansen 2012: 27; Reedy 2008; Selwyn 2011: 132-136). Learners become active in the teaching and learning experience; therefore, teachers are viewed as facilitators of learning (Blair 2012: 10-11; Imazeki 2014). In the journal article written by Taylor and Robinson (2009), both academics conclude that teachers assist learners to develop critical thinking skills and act as a resource while learners engage in the discovery of new concepts.

3.2.3.2 Devices

The ability to operate technological devices proficiently is an indispensable skill (Jonassen 1994; Marsh 2005). Devices are an essential tool as it is a defining characteristic of the modern Arts classroom, yet does not completely replace the utilities of pen and paper (Lipstein & Renninger 2007: 114-118). These devices provide the means to conduct research and master the technology skills needed for the corporate environment (Collis 2005: 215-217; Klopfer *et al* 2009: 6; Scherer & Cator 2011; Blair 2012; Latham & Gross 2014: 46-47).

3.2.3.3 Adaptive Learning

In 2005 (: 191-193) Lin *et al* suggested that because media-enhanced Arts classrooms are composed of learners with varied learning styles, it therefore requires an adaptive approach to learning that permits the teacher to educate learners at a pace conducive to their mental capacity.

3.2.3.4 Invitational Environment

The Bring Your Own Device (BYOD) approach is adopted, so that individuals can bring their own laptops, tablets or various other handheld devices to the Arts classroom for better personalised learning (Imazeki 2014). Utilising this methodology is more effective as it stimulates engagement and makes it easy to focus on learning (Glazzard *et al* 2014: 96-97).

3.2.3.5 Rules and Procedures

Moore and Hansen (2012) encourage the environments of the different Art disciplines be planned and organised: rules and procedures be posted in convenient places to assist with classroom management. Learners follow class routines and understand what is expected to be achieved each day.

3.2.3.6 Mutual Respect

As the role of teacher is no longer the focal point, learners continue to value the teacher as they serve as the MKO (Vygotsky 1978; Willis 2007: 12; Selwyn 2011: 132-136). The Arts classroom environment encourages mutual co-operation and respect (Gardner 1999: 43).

3.2.3.7 Self-directed Learning

Thompson (2011: 17) states that "*teachers employ a variety of strategies to promote responsible decision-making and*" self-directed learning. Self-directed learners encourage each other; assisting one another to achieve academic excellence (Haycock 1991; Harding-Smith 1993).

3.2.4 The Four C's

To master the skills of *critical thinking*, *creativity*, *communication* and *collaboration*, the pedagogy employed by teachers ought to adapt across learning styles (Darby & Catterall 1994; Beschorner & Hutchison 2013; Fogarty & Stoehr 2008: 23-42). Garrison (2011: 113) goes on to say that it is '*the process of learning, not* [the]… *access…to content'* that addresses the four C's. Technology is the ideal vehicle to facilitate this process by allowing learners to design and create (Ackerman & Perkins 1989; Haycock 1991; Darby & Catterall 1994; Cheng & Chau 2009). Learning transpires when teachers assist learners to uncover information and not impose it on them (Doloughan 2002; Pitler *et al* 2007).

3.2.4.1 Critical Thinking

Critical thinking skills are developed through the type of questioning used by the teacher states Bloom, Engelhart, Furst, Hill, and Krathwohl (1956). With the dissemination information, learners are required to think abstractly about concepts (Webster 2006).

3.2.4.2 Creativity

Promoting creativity and innovation in the Arts encompasses challenges that have many possible outcomes. Creativity in thought is sought after through which creative competencies such as fluency, flexibility, association and synthesis develop in tandem with creative problem-solving (Darby & Catterall 1994; Piirto 2011: 117-142).

3.2.4.3 Communication

The development of communication skills occur through the interaction of the learner and the media: communication skills reflect the media rich Arts classroom (Walls 2000: 16-19; JCMF 2010; Lou & Lei 2012).

3.2.4.4 Collaboration

Collaborative learning redefines traditional teacher-learner relationship (Harding-Smith 1993). Learning through collaboration broadens learning and develops a range of interpersonal skills (Gardner 1999: 43). The process is characterised by self-responsibility, awareness, mutual respect and contributions from different perspectives.

3.2.5 General Skills

Although Toffler (1971: 357) did not provide an exact definition for technology literacy, he provided a starting point by noting that "*the prime objective* [of education] *must be to increase* [an] *individual's*…speed… *with which he can adapt to continual change*… [anticipating] *the directions and rate of change*… [for] *super-industrial education"*. Technology has increased the complexity of literate environments, therefore it necessitates that teachers ensure that learners acquire a range of competencies during their scholastic period (Collis 2005: 215-217; Scherer & Cator 2011; Smagorinsky 2012: 197; Blair 2012: 9-10; DoE 2012a).

3.2.5.1 Examples of General Skills in the Arts Classroom

Information and Communications Skills
Utilising software that encompasses the processing of words and the internet to manage and integrate information.

Thinking and Problem-solving Skills
Using representational tools to manage complexity and solve problems systematically.

Interpersonal and Intrapersonal Skills
Applying productivity tools such as e-learning and collaboration to increase efficiency and personal development.

Digital Technology

Employing technology to access information and integrate into teaching methodology to teach using real-world examples.

3.3   CONCLUSION

As the world grows increasingly independent, learners require a global perceptive in the knowledge economy (Collis 2005). Learners are in need of a wider range of competencies to compete in the corporate sector (Scherer & Cator 2011; Smagorinsky 2012: 197; Blair 2012: 9-10; DoE 2012a). Through the use of technology, the teacher must provide adequate educational experiences that assist learners in discovering and uncovering new skills (Scheffler & Logan 1999; Whitehead *et al* 2013).

Blair (2012: 10) states that in order for a learner to reach his or her full potential they "*need access to* [an]… *evolving array of technological tools and activities that demand problem-solving, decision-making, teamwork and innovation*". The teacher ought to ensure that learners are actively engaged in what they learn; moreover, that they participate in group activities and complete projects to learn effectively and live productively in the digital society (McCarrick & Li 2007; Taylor & Robinson 2009).

Chapter IV

TECHNOLOGY IN THE ARTS CLASSROOM

"Technology is not revolutionary; it is evolutionary."

- Anonymous

4.1   INTRODUCTION

The word technology is derived from the Greek word '*techne'*. Originally it meant '*art*' and was utilised in the context of a craftsmanship. During the Renaissance the concept evolved to include the skills possessed by artisans (DiLuzio 2009: 132-133; Kamien 2015).

The context in which the word has been used has altered significantly in the last two centuries (Moore, Dickson-Deane & Galyen 2011; Imazeki 2014). Bain (1937: 860-861) writes that in centuries past it referred to the actual making of a device. Consequently the term has become more inclusive due to the development in all areas of human life. The definition now extends beyond the boundaries of a learned skill and includes (but not limited to) the following: equipment, machinery, utensils, artillery, instruments, accommodation, attire, communication, transportation and the ability by which we produce and use the various items listed (Cline 2014: 3).

Major technological breakthroughs leads to societal change. As technology advances, so does change gain momentum leading to modification in values, attitudes, lifestyle(s) and society as a whole (Haferkamp & Smelser 1992: 2-4).

Modern technology can be perceived as a movement that forms and transforms culture. A contemporary example is the rise of *communication technology*. Amensi and Akpomi (2013: 13) emphasise that this technology has mitigated the boundaries of communication and as a result has assisted in the creation of new subcultures.

4.2 WHAT IS TECHNOLOGY?

While researching this topic, it became evident that due to the rapid evolution of technology neither sociologists nor anthropologists have spent an adequate amount of time discussing this topic and developing new definitions for the terminology in question.

The history of technology is the history of the invention of tools and is similar in many ways to the history of humanity too, suggests Rogoff (2003: 276-278). The exponential growth of technology in the last hundred years has propelled humanity further in terms of information and skills than it did since the creation or evolution of man (Miller, Michalski & Stevens 1998: 7-8). Knowledge has made it possible for people to create new objects and scientific endeavours have been expanded through technologies which assist with humanities impetus in establishing a better world intended for future generations (Puricelli 2011; Wientjes 2011; Ruzic 2011; Tabusum *et al* 2014).

The demarcation of this study encompasses the use of technology in a classroom setting therefore it is imperative to establish what technology is in this context and the impact it had, initially on society, thereafter, the effect(s) it has on Arts education.

4.2.1 Social Construction of Technology

Technology has become a pivotal part of daily life. New types of technological devices are continually introduced to society. After a device has attained a level of suitability and acceptability it is then assimilated into societal life and no longer seems novel says Puricelli (2011: 4).

Pinch (1996: 24-25) argues that technology is indeterminate of human action and that human action shapes technology. Ruzic (2011: 259) supports this viewpoint and suggests that the ways in which "*technology is used cannot be understood without understanding how that technology is embedded in its social context*".

4.2.2 The Information Society

One merely needs to turn on the television, listen to the radio or browse the internet to encounter references to new information (Berk 2009; Lee-Wright 2010: 89-312; Moore *et al* 2011: 129). There are several reasons for the dissemination of information but most prominent amongst them is the pervasiveness of information itself (Cline 2014: 96-102). There is more information circumnavigating than before. Media and media products have left an indelible mark on society; especially the accelerating permeation of computerised technologies in educational institutions and occupations that encompass dissemination of information (Cline 2014: 57-82). Webster (2006: 468) concludes by emphasising that these developments have led to the description of this time period using its most distinct feature: the information society.

4.2.3 Impact of Technology on the Information Society

Accessing information from any location in the world and at any time has become effortless, states Chayko (2008: 180). It has been made possible due to modern technologies such as smartphones, tablets and laptops (Berk 2009). These gadgets allow for an ease in accessing the internet and acquiring information. A copious amount of data is published and indexed online (Berners-Lee & Fischetti 2008; Beschorner & Hutchison 2013). This information which often is unique and original in nature can be used in research or for personal enrichment (Burden & Atkinson 2007; Berk 2009; Fralinger & Owens 2009; Tamim 2013).

By way of an analogy; communication is like water which gives sustenance to human beings. We cannot develop without communication. Modern technology has equipped us with highly sophisticated communication tools (Cennamo *et al* 2014: 191-242). These communication tools include electronic mail, mobile cellular phones, videoconferencing, instant messaging and social networking. All these modern technological communication tools have simplified the way humanity interacts and communicates (Miller *et al* 1998: 7).

For the purposes of this study, *technology* will be defined as a device used for the advancement of society through the medium of communication, tele-communication, technological artefacts and digital technology to develop and enhance knowledge, skills, values and attitudes globally (Castells 2005: 3-6).

4.3   WHAT IS EDUCATIONAL TECHNOLOGY?

Echoing the abovementioned, Cardoso (2005: 27) develops the idea and states that ET is the simultaneous use of curriculum and technological tools employed in teaching methodology. It encompasses tools such as multimedia, machinery, networking hardware and philosophical beliefs for their effective implementation.

Digital ET has become an important component of the information society. ET includes: e-learning, EdTech, networked learning, learning technology, multimedia learning, computer-based instruction (CBI), online education, digital education and personal learning environments (Sri & Krishna 2014: 6124). Collectively these labels combine to form the broad domain of ET. Individually they emphasise a particular digitisation approach, component or delivery method (Moore *et al* 2011: 130).

4.3.1 A Brief Overview of Educational Technology

1890: The Chalkboard	**1996:** The Internet and the World Wide Web
1925: The Filmstrip	**1999:** Interactive Whiteboard
1957: B.F. Skinner Teaching Machine	**2004:** YouTube
1960: The Overhead Projector	**2005:** Audience Response Device
1970: Educational Television	**2007:** Smartphone and Tablet
1972: Test Scoring Machine	**2013:** Interactive Mobile Applications
1977: Desktop Computer	

4.3.1.1 The Chalkboard

Prior to the chalkboard, learners made use of handheld slates and teachers were required to write on each of the individual slates. Slates were simple wooden boards painted with a black grit. Later, large slabs of slate were introduced into the classroom enabling a large number of learners to be taught (Davies 2005: 63-65).

4.3.1.2 The Filmstrip

The "*filmstrip* [was] *a continuous strip of film consisting of individual frames or pictures arranged in sequence… with explanatory titles*" (Neeraja 2011: 383). Filmstrips were used as a tool to view educational videos during lessons and allowing teachers brief intermissions for class discussions.

4.3.1.3 B.F Skinner Teaching Machine

Burrhus Frederic Skinner embarked on a course of studies focussed on improving teaching methods by utilising a mechanical device that ameliorated the teaching and learning experience. The teaching machine was in theory, a set of programmed learning tests that did not require the body of knowledge to be taught (Mukadam, Vyas & Nayak 2014: 144-145).

The device was composed of multiple choice questions. If the answer was correct, the learner would receive positive reinforcement by the device dispensing a piece of candy at a predetermined interval and the learner could move on to the next question (Mukadam *et al* 2014: 145; Ursyn 2014: 109-111).

4.3.1.4 Overhead Projector

An overhead projector is based on the same fundamental design as the filmstrip; it focuses a lens light from an illuminated slide onto a projection screen (Sparks 1981: 5-9).

The overhead projector promoted an interactive environment for teachers. Kaur (2014: 19) points out that since the transparency could be pre-printed, this alleviated the need to erase and rewrite materials on the blackboard before every lesson. Moreover, transparencies could be used repetitively and stored for later use.

4.3.1.5 Educational Television

In the late 1960s a plan was formulated in which news and documentary programs would be screened regularly. News programs were lengthened to a period of half an hour highlighting domestic and international affairs (Hilmes 2014: 215, 228 & 231).

Public Broadcasting Service (PBS) was founded in 1970 and began airing educational television such as *Sesame Street*, *The Andy Griffith Show*, *Looney Tunes*, *The Flintstones*, *Tom & Jerry*, *Mister Rogers' Neighbourhood*, *Alice*, *Gerald McBoing Boing*, *Charlie Brown*, and many others (Lee-Wright 2010: 145-162).

4.3.1.6 Test Scoring Machine

Tests worked on the basis of a multiple choice system in which the block or circle indicating the correct answer should be darkened. Tests were processed through an Optical Mark Recognition (OMR) system, which a scanner made use of phototubes which emitted a ray of light through the paper and examined the reverse

side noting which areas were darkened (Grossman, Howe & Gruman 1965: 156-157).

4.3.1.7 Desktop Computer

A desktop computer is intended for regular use in a single location due to its size and power requirements. The configuration is a computer monitor, keyboard, mouse and the Central Processing Unit (CPU) that houses the main components of the PC. (IBM 1984).

4.3.1.8 The Internet and World Wide Web

Most people are familiar with search engines such as *Internet Explorer*, *Firefox*, *Google* and *Opera*. The inclination is to accept that these offer a pathway to the internet. However, it does not: it is an access point to the *World Wide Web* (www) which is a branch of the internet. The internet is not the same as the *World Wide Web.* Berners-Lee & Fischetti (2008) describe how the *internet* is composed of an infinite number of small computer networks combined to form the enormous inter-network; furthermore, the *World Wide Web* is a network of interlinked documents that are accessed through the internet.

4.3.1.9 YouTube

The internet has experienced the inauguration of a new global phenomenon in which amateur performers upload their video performances and have millions of viewers watch them at their leisure. This medium of performance is known as *Cyberformance* (Jamieson 2008)*.*

4.3.1.10 Interactive Whiteboard

An interactive whiteboard (IWB) is a large interactive display that connects to a laptop or a PC. A projecting apparatus projects the desktop onto a whiteboard where the user controls the computer using a pen, finger or stylus (Betcher & Lee 2009: 1-12).

4.3.1.11 Smartphone and Tablet

Smartphones and tablets are small computing devices that have a display screen with the input and the output of device combined into a touch-screen interface (Tabusum *et al* 2014: 928).

Both devices have an OS that run various types of application software (Parsons & Oja 2014: 184-187). Most are equipped with a camera, a media-player that plays music and videos file, Wi-Fi and bluetooth (Imazeki 2014). Mathew and Sathyabama (2014: 60) state that being able to make a wireless connection to the internet and with other bluetooth-capable devices increases the productivity of the gadget. Therefore a handheld device can be invaluable in areas where learning takes place.

4.4   MEDIA USED IN THE CLASSROOM

New technologies and communication concepts are being assimilated in teaching pedagogy: social networking, online teaching, blogs, podcasting, interactive whiteboards and mobile devices are to name a few (Lou & Lei 2012: 77). These technologies can be beneficial in the teaching and learning process if implemented correctly and used appropriately to enhance the concepts being taught.

4.4.1   Audio and Visual Aids

Learners acquire knowledge and skills through their sensory organs (NRC 2000: 79-113). The sensory organs assist learners in understanding the social context in which they are placed in (Evangelou *et al* 2009: 11-13; Vygotsky 1997: 21-24). The learning materials provide concrete learning experiences which give firsthand experience of content knowledge (Jalongo 1996; McCarrick & Li 2007; Collins 2008; Whitehead *et al* 2013).

Audio-visual equipment enhances teaching methodology. Modern technology offers an array of tools to capitalise on the learner's preferred style of learning.

4.4.1.1 Types of Audio-visual Aids

Learners derive their experiences through direct sensory contact. Audio-visual aids can be classified on the basis of the sensory experience. The three main groups are:

- Audio Aids   -   Radio, tape-recorder, CD player, MP3 player

- Visual Aids   -   Chart, interactive whiteboard, maps, pictures, textbooks, projections, flash cards, printed materials

- Audiovisual Aids -   LCD projector, film projector, TV, PC, DVD player, multimedia, tablet, smartphone

4.4.1.2 Auditory Learners and Aids

Auditory learners are sensitive to the spoken word (Gardner 1999: 41). Taped recordings of lessons or movies are helpful due to the underlying speech nuances. PC's with speech-recognition software assists to process information, thus the retention capacity of the learner in increased (D'Amico & Gallaway 2010: 18).

4.4.1.3 Visual Learners and Aids

Visual learners draw from graphic representations such as charts, illustrations and diagrams. Teachers ought to take the time to compose or locate visual resources to accompany written content that augments the learning potential of learners.

4.4.2 Advantages of Using Media in the Classroom

- Makes the learning process effective and conceptual
- Builds interest and motivation in the learning environment
- Provides key conceptualisation of real-world experiences
- Appeals to a wide range of learning styles (Orey 2001)

4.5 INTEGRATING EDUCATIONAL TECHNOLOGY INTO ARTS EDUCATION

Even though there is a propensity of research into teaching methodology, a lack of research exists in the areas of ET in the Arts classroom. The Canadian Public Art Funders (2011) note the increased use of ET in areas of the Arts other than education. Additionally they state that technology has been used globally in displaying advancement in the Arts yet this has not been adequately researched in the classroom.

Due to the limitations imposed by the statement above and the rapid evolution of ET, the researcher used a cross-disciplinary approach to apply technology integration in the Arts. The researcher suggests that the following technologies can be implemented in the Arts classroom.

4.5.1 Interactive Whiteboard

4.5.1.1 Description of the Technology

An IWB is a device that projects and duplicates the computer screen allowing for the input of text and manipulation of text and images as well (Betcher & Lee 2009: 1-12). The teacher can manipulate the elements on the board by using their finger directly on the screen. Items can be selected, dragged, copied and handwritten notes can be converted into digital text (Moore 2015: 143). The device has a multitude of multimedia functions such a video, sound, images and accessing the WWW (Betcher & Lee 2009: 33-36 & 88-103).

4.5.1.2 Implication for Teaching

Pedagogical Orchestration of the use of IWB

Beauchamp and Kennewell's (2013) literature discusses the pedagogical orchestration of the IWB. In the introductory paragraph (Beauchamp and Kennewell's 2013: 179) the researchers state that "*a substantial body of literature*

concerning the [IWB]... *and its* [inclusion] *in teaching and learning from around the world*". The researchers assert that based on the limited literature provided previously on the topic, aspects of the research conducted were overlooked. After careful investigation, they uncovered a common characteristic, that is, they identified the multimodal nature of the technology. Studies conducted by Jewitt *et al* (2007), Mercer *et al* (2010) and Twiner *et al* (2010) are among the few who researched the multimodality feature of the IWB. Additionally, the orchestration of the utilisation of secondary resources "*reflects an awareness of the continual availability*" of the resources that IWB's represents (Beauchamp & Kennewell 2013: 180).

Synergistic Interactivity

In a study conducted in 2010, Beauchamp and Kennewell sought to define the relationship between interactive teaching and interactive technologies such as the IWB. In the conclusion, the researchers (Beauchamp & Kennewell 2010: 763-764) mention that they value the synergistic interactivity aspect of the technological device in all learning areas. Research conducted by Hennessy *et al* (2005) uncovered that when teachers embraced the new pedagogy, the technology itself adapted to the subject culture, rather than methodology adapting to fit new tools.

IWB and the Visual Culture in the Classroom

In her article, Hockly (2013) critiques the use of IWB in the Language arts. She (Hockly 2013: 357) notes that the strongest advantages are the engagement and motivation displayed by learners interacting with content increasing the learning efficacy. Reedy (2008) highlights the power of the device to place emphasis on the learner, rather than the teacher, creating an invitational platform for learners to take charge of their own learning. IWB's revolutionises the use of other technologies as it allows collaboration and inclusivity of the participants (Kennewell & Beauchamp 2007). Moreover, IWB's combines all forms of digital ET in an interactive format (Jewitt *et al* 2007; Betcher & Lee 2009; Twiner *et al* 2010; Cutrim-Schmid & Whyte 2012)

A large number of research studies are conducted using IWB's in Language arts. Therefore the researcher sought articles focusing on the creativity aspect which displayed a cross-curricular linkage to the use of words in drama (Sheehan & Mills 2008; Mercer *et al* 2010; Hockly 2013)

4.5.2 Computing Devices

4.5.2.1 Description of the Technology

A small computing apparatus has a display screen with touch input or a miniature keyboard (Tabusum *et al* 2014: 928). A larger computing device may be free standing and may require a desk such as a laptop and/or a PC.

4.5.2.2 Implication for Teaching

Characteristics of Computing Devices

More than a decade ago Klopfer *et al* (2002: 96-97) described the properties of handheld devices that produce and reproduce ET affordances: "*portability, social interactivity, context sensitivity*, *connectivity* and *individuality*". The researchers argue that due to the affordances, learners are in an environment that presents unique modes of learning catering to the needs of personalised learning (Lin *et al* 2005; Kuhn 2008; Flewitt 2008).

Cross-Disciplinary Relationships with Learning Areas

Furthermore, a study embarked on by Subrahmanyam *et al* (2000: 128) concerning the impact of the PC on child development and activities concludes emphatically that the skills acquired through this medium are transferable to areas such as Science, where the propensity to manipulate images, conduct research and interact with the global results in learning. Additionally, this reiterates the fact that the PA curriculum displays cross-disciplinary relationships with other learning areas (Motluk 1997; Rauscher & Zupan 2000; Burton *et al* 2000; Catterall 2002; Kassing & Jay 2003; McDonald & Fisher 2006).

Story-telling as a Medium of Expression

Hutchison *et al* (2012) wrote on the use of handheld devices to facilitate and enrich storytelling. Kucirkova *et al* (2014) developed this idea further and researched an educational APP called *Our Story*. The researcher's present evidence noting the multimodal nature focussing on the major benefit of learners not being able to verbalise their stories are able to present it in an audio-visual format. Furthermore, they claim that APP's of this nature cater to the needs of individualised learning environments due to language barriers and socio-emotional difficulties (Kucirkova *et al* 2014: 51-52). These claims are supported in the earlier publications by researchers such as Ware (2006) and Flewitt (2008).

Journal articles on the technology in question ranged from general uses of technology integration, to the use of handheld devices used in educational gaming, storytelling, poetry, music appreciation, social networking and as a research tool (Subrahmanyam *et al* 2000; Rauscher & Zupan 2000; Klopfer *et al* 2002; Ware 2006; Kuhn 2008; Hutchison *et al* 2012; Beschorner & Hutchison 2013; Tabusum *et al* 2014; Kucirkova *et al* 2014). The skills acquired through these devices can be applied to the skills developed in the various Art disciplines.

4.5.3 Educational and Interactive Games

4.5.3.1 Description of the Technology

Educational games are designed to expand concepts, reinforce development and assist in developing skills through an interactive platform (Can & Cagiltay 2006: 309).

4.5.3.2 Implication for Teaching

Collaborative Learning

Klopfer and Squire (2008) engaged in a research study by incorporating games into classroom practices. They concluded that when learners failed to be successful in their initial attempt, they sought alternative solutions to overcome their challenges; often engaging others to assist (Haycock 1991; Harding-Smith 1993; de Freitas

2006; Blair 2012). This model can be applied to other software applications where learners need to collaborate with one another to achieve an objective.

Improves Visual Intelligence

Games are designed to emphasise visual information processing. Gaming which involves rapid movement and high-definition imagery improves visual intelligence skills state Couse and Chen (2010), who researched the viability of a handheld device in early childhood education.

Development of Musical Concepts

In her critique of the use of popular music in video gaming, Collins (2008: 36) points out that there is a growing symbiotic relationship between the music industry and gaming industry. Music-based games often make use of elements such as riffs, beats, rhythm and vocals sequences. These are skills developed in the discipline of music (DoE 2012b: 12-13 & 2012c: 17-20). *Guitar Hero*, *Dance Dance Revolution* and *Music Generator* are games associated with class music because it engages all participants (Harding-Smith 1993).

Additional Resource

Games ought not to be used on their own as a learning tool. These act as supplementary resources to the concept(s) engaged with previously. Smaldino *et al* (2014: 328) proposed that computer games fulfil cognitive objectives such as visual perception, sequencing and sense of direction. Can and Cagiltay (2006) explored the perceptions of teachers with regards to educational gaming. Smaldino *et al* (2014) concurred with Can and Cagiltay (2006); furthermore, extending it to include features such as application of knowledge, investigation, discovery and hands-on experience.

4.5.4   Digital Video

4.5.4.1   Description of the Technology

Bruce and Chiu (2015: 272) reference digital video (DV) being a flexible literacy tool utilised for a variety of creative output utilising visual, audio and kinaesthetic methods to represent ideas.

4.5.4.2   Implication for Teaching

DV has a strong connection to the youth-media culture currently experienced globally (Marsh 2005). The interest attracts learners, drawing on their implicit and explicit knowledge of social media tools (Hull & Katz 2006).

Multimodal Teaching

Bruce and Chiu (2015: 278-279) discovered that there was a connection between the technology used and the content knowledge of the learning area. Teachers reported that learners connected with DV due to its multimodal teaching ability. Furthermore, sensitivity to word was enhanced due to the active engagement during the production process (Gardner 1999: 41). Textual stance was altered since visual and auditory conventions were an additional sensory learning aspect (Sheehan & Mills 2008: 173-176). Moreover, the teachers felt that DV composition would allow learners to read texts in an interactive way. Young *et al* (2010: 9) state that DV are "*products that combine text, images, audio and video in innovative ways that build upon traditional notions of what we understand*".

Cartoons as an Educational Tool

In the Spring edition of *Education* (2013) Mattar (: 370) describes how *"*[m]*usic can become an important part of any educational setting* [as] *it provides a positive atmosphere, which helps... enhance* [educational] *development".* This alludes that the correct implementation and application of music yields educational affordances.

Cartoons such as *The Band Concert* (1935), *The Sorcerer's Apprentice* (1940), *Fantasia* (1940), *Pigs in Polka* (1943)*, Rhapsody Rabbit* (1946), *The Cat Concerto* (1947), *A Corny Concerto* (1950), *Tom and Jerry in the Hollywood Bowl* (1950), *The Rabbit of Seville* (1950), *Magical Maestro* (1952), *What's Opera, Doc?* (1957), *Baton Bunny* (1959), *Fantasia* (2000), *Little Einsteins* (2005 - 2009) and *Barbie in the Pink Shoes* (2013), all make use of classical music in their storylines and evoke emotions throughout their duration. Through the use of musical cartoons, teachers can help learners to understand the basic premise(s) of music (Jalongo 1996). Learners display a greater sense of enthusiasm when they are taught a concept through interesting musical methods (Campbell *et al* 2004: 138-145).

Mattar (2013: 376) concludes that due to the emotive nature of music; a positive environment is created that enhances development of communication, emotional, cognitive and social dimensions of a learner. Being a non-verbal characteristic, it stimulates the right hemisphere of the brain associated with feeling (Turgeon 1994: 15-17). Moreover, the ability to understand and expresses oneself (Gardner 1999:43) leads to improved emotional regulation (Bandura 1993:117–148; Montello 1999; Pitler *et al* 2007: 155).

YouTube as an Educational Tool

Berk (2009: 19) concluded that video technology is the only form of media that arouses the sensory organs. Furthermore, the nature of video technology engages the right and left hemispheres of the brain. "*Video* [accesses the] …*human brain's core intelligences which are … linguistic, …spatial and musical*" (Jones & Cuthrell 2011: 77). Activation of both the sensory organs and intelligences creates the ideal learning environment. Research conducted by Tamim (2013: 336) lists the media-enriched environment as a contributing factor to catering to the preferred learning style of learners. In addition, the comprehension of concepts by learners of a visual and auditory learning style is greatly increased (Fleming & Mills 1992; Gardner 1999: 42; NRC 2000: 79-113; Lin *et al* 2005; Fogarty & Stoehr 2008: 21-43; Kuhn 2008: 19; Selwyn 2011: 132-136)

YouTube allows learners to experience education beyond print through authentic videos allowing them to witness events as they unfold before their eyes (Burden & Atkinson 2007; White 2009). This is a significant aspect as many learners are not afforded the opportunity to engage in real-life experiences (Can & Cagiltay 2006; Cennamo *et al* 2014: 109-136).

4.5.5 Digital Diary

4.5.5.1 Description of the Technology

Digital reflection transforms the traditional pen-to-paper practice by incorporating visual and auditory stimulus (Doloughan 2002). Nelson's (2009) model of critical reflection includes reflective journal entries recorded in media tools such as sketchbooks, photographs, video recordings and location in a conceptual framework.

4.5.5.2 Implication for Teaching

Digital Reflection

Kirk and Pitches (2013) state that documentation of assessment begins with the process, culminating in the reflection after the creative experience. The use of camera/video/audio provides a mirror image to reflect upon (Nelson 2006). The very act of producing such a media output, places the learner in the position of the viewer. Siegel (1995) points out that the process of transmediation allows learners to engage in reflective thinking whereby they, as Kirk and Pitches (2013: 215) puts it, "*translate between different* [perspectives] *…to produce and invent meanings and connections".*

4.6 INTEGRATING TECHNOLOGY INTO ARTS EDUCATION IN A SOUTH AFRICAN CONTEXT

4.6.1 Practical Ways of Integrating Technology in Dance Education

Technology can be incorporated in a variety of ways to assist in dance education. The researcher suggests that technology can be integrated practically into dance education in the following ways:

o Educators may make use of the video camera from their smartphone. Learners can perform their dance routine while the educator records this for assessment at a later stage.

o Have the learners who lack the confidence to dance in front of others or are challenged by rhythm – record the dance routine(s) and practice it on their own.

o Projection of music will need to be produced by an external source. A CD player or an MP3 player could be used in this regard. Learners could be invited to bring a device of their liking along to the lesson. Individuals or groups may then vacate the classroom and find a quiet area on the school grounds to practice their routine without disturbing others.

o Incorporate dance inspired fitness videos such as *Hip Hop Abs* and *Zumba*. These videos may be used as a warm-up exercise at the commencement of a lesson.

o The entire school could create a YouTube channel. The teacher can be the administrator thereof. As motivation, the final practical summative assessment could be uploaded.

o One can utilise video games of a kinematic nature such as *Dance Dance Revolution*, *Just Dance Wii* or *Dance Central*. Two to four learners can make use of the controllers while the remaining learners stand behind them and mimic their movements. The teacher observes the class and the learners who are mastering the various routines are chosen to use the controllers next. In addition, the class can be divided into groups and the groups compete against each other.

o Dance educators network and build relationships with professional dancers. The teacher could organise a session where the professional could instruct the learners for that particular lesson. The professional need not be physically present as technology has made instruction through webcams possible. Skype can be employed for the webcam transmission during the course of the lesson. The educator can setup his/her laptop, the speakers and projector and arrange the webcam in such a way that the professional can see the learners. The teacher would still be maintaining the discipline in the class as his/her presence is invaluable and crucial to making the form of this instruction a success.

o Many learners do not live near a theatre nor are performances scheduled regularly either. By way of a laptop, speakers and a projector, learners are able to watch top performances by professionals from all around the world. This method of viewing the discipline from a critical viewpoint could be incorporated into every dance lesson where learners watch a short clip of a dancer and then can reflect on this by either having a class discussion or the learners may keep a journal.

o *Great Dance Debate* and *Stimulus* are dance-related software that can be downloaded from the internet without charge. These two programs have been developed to allow learners to think abstractly in a controlled environment and stays within the limits of the curriculum.

o Researching the diverse styles of dance is important. Research pertaining to a desired dance form could be given as a summative assessment at the end of the academic year. The entire project could comprise of a research essay, a PowerPoint presentation and a practical demonstration of the movements of the style of dance. The research could take place in the computer lab. The presentation could be combined in a dual purpose assessment whereby the computer facilitator assists learners in the creation of presentation thus obtaining a mark across two learning areas. In addition, a video from YouTube demonstrating the chosen dance style could be included in the presentation. Finally, learners are to present either a dance or movements specific to that dance form as the concluding constituent of the assessment. All the components of the projects must be completed at school thus eliminating the assistance learners could obtain from parents/guardians.

4.6.2 Practical Ways of Integrating Technology in Drama Education

Educational games with the emphasis on an element of drama are applied to teach the art form. The researcher suggests that technology can be integrated practically into drama education in the following ways:

o The educator can make use of the timer on his/her phone; allowing for good time management with regards to the various activities taking place during the lesson. One learner could be identified and be responsible for tracking the time and reporting back once the allocated duration of the activity has elapsed.

o One aspect of drama that is often neglected is voice projection. The educator leads all the learners out of the building to an open field. Learners stand in a circle and close their eyes. The educator who is in possession of a megaphone, whispers something very softly over the device and learners must mimic what was said. The activity continues in the same way, becoming increasing louder until the teacher speaks at the top of his/her voice.

- At school concerts learners use a microphone to welcome the audience, when engaging in a dialogue or when delivering a vocal performance. This is a skill that needs to be developed over time. Toy microphones allow for practicing the skill throughout the academic year. Often these toy microphones have a built-in speaker or are attached to an amplifier that controls the output volume. When performing or completing assessments in the class, learners can use these to introduce the individual or the group.

- Educators can incorporate the use of music in lessons. The educator can upload animal and natural sounds on their smartphone or mp3 player. Learners are to sit in a circle and one learner is selected to begin the game. The learner then places the earphones in his/her ears and acts out the sound that is audible to them. The learners in the circle must guess what the learner is depicting. The learner who guesses correctly replaces the learner in the center.

- Viewing films, plays and musicals is an integral component of the learning experience. Using a TV or a laptop with a projector affords the learners the opportunity to view performances by professionals. After viewing the clip learners can engage in a discussion where they can critique the performance.

- The educator can record the performances of the learners over a period of time. The video camera must be placed in such a way that it does not distract learners from the experience at hand. The learners are then given an opportunity to view these clips and critique themselves. This is a form of reflection and a viable means to teach learners to think critically.

- Reflecting on drama experiences should occur regularly. By having learners keep a digital dance journal will help to annotate their feelings and experiences. This journal can be exported to the teacher's laptop where it can be viewed. Feedback can be given to the learners if needed.

o Storytelling plays an important role in the lives of younger learners. Teachers can make use of interactive books. These books are visually stimulating as it contains accompanying pictures to the text. The books have an inbuilt speaker mechanism that when activated through a switch will make the sounds depicted in the picture. Thus learners will begin to make the association between an object and the sound it makes.

o A large number of storybooks have an accompanying audio CD. The teacher can play the CD while the learners follow the text in the book. The learners can participate and make the experience more interactive by making the various sounds denoted in the story.

4.6.3 Practical Ways of Integrating Technology in Music Education

The researcher suggests that technology can be integrated practically into music education in the following ways:

o A MIDI keyboard could be made available for learners to utilise while interacting with music software. Learners would be able to compose simple phrases and listen to their compositions in real-time. The software also allows for learners to make adjustments to notes.

o The use of an IWB becomes invaluable when learners are writing on manuscript paper. Due to the nature of education, teachers teach intricate concepts and provide examples by systematically going working through these. Doing these on a screen big enough for learners to see is important. Capturing the exact examples is important too. IWB's have these functions. Teachers can use the IWB to teach scales, intervals, harmony and chords.

- Learners need to listen to music during every lesson; therefore a set of rechargeable speakers becomes invaluable to the discipline. These types of speakers can be connected to a PC, tablet or smartphone. Learners are required to listening critically to music. The teacher could play an excerpt from various styles of music and ask learners to describe the extract in terms of the elements of music.

- A CD player or MP3 Player is useful when the teacher needs to play music continuously. Playing ambient music enhances learning. Even though the listening appreciation exercise has ended, the teacher may continue to play soft music in the background to stimulate thinking and guide the thoughts of learners while engaging in other music related activities.

- When teaching learners the concept of tempo, it is important to have a device such as a metronome in the classroom. Musical terms are in Italian and by allowing learners to make the association between the term and the actual tempo is important.

- Play video clips, films, and excerpts from musical performances of different styles to learners. Learners need to be introduced to music produced by professionals. By watching the videos learners will be learn to indentify the different classes of instruments, listen critically to the music and derive the acceptable concert etiquette for each style or genre.

- Learners may be given an exercise in which they listen to the music and analyse the lyrics of the song. Learners may be given the opportunity to use the backtrack of the song and create their own lyrics based on a relevant societal issue.

Table 4.1   Accessible Educational Technology Used in the South African Classroom

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Dance	Drama	Music
Television/Dance shows	Television	Television/Cartoons
DVD player and DVD	DVD player and DVD	DVD player and DVD
CD player/MP3 player and CD	CD player/MP3 player and CD	CD player/MP3 player and CD
Tablet/Laptop/PC	Tablet /Laptop/PC	Tablet/Laptop/PC
Projector	Projector	Projector
Video recorder	Video recorder	MIDI keyboard
Cellular phone	Cellular phone	Interactive Whiteboard
Webcam	Toy microphone	Video recorder
Interactive games	Megaphone	Portable rechargeable speakers
Dance software	Interactive books and CD	Metronome
Technologies developed by the teacher and/or learners		
Digital dance diary	Digital drama diary	Digital music diary
YouTube channel		

4.7   CONCLUSION

The twenty-first century is synonymous with technology. The world is powered by electronic devices which are progressively becoming more advanced each day. This technology is reaching all areas of daily life: from people's homes and into the schooling environment (Miller *et al* 1998: 10-11).

The methods of the traditional classroom may have once proven effective but over time they have lost effectiveness and teachers are required to develop new strategies to teach the same concepts. Teachers must ensure that learners are engaged and motivated during contact time and provide quality teaching using an array of methods, following different pedagogical approaches aided by technology.

Although teachers are agents of change a disparity is evident between teacher and technological expertise. Subsequent studies conducted by Leu, Kinzer, Coiro and Cammack (2004) and Fralinger & Owens (2009) concluded that teachers lack the necessary skills needed to bridge the technological and social gap between themselves and the media-induced youth they educate. In addition, though teachers possess technology skills, many do not successfully integrate technology into their pedagogy (Lawless & Pellegrino 2007).

It is important to assist teachers in selecting the appropriate media tool for the concept to be taught states Collis (2005: 221-222). Professional development allows teachers to overcome their fear and anxiety when interacting with media tools and technological devices (Agyei & Voogt 2011). The only method of acquiring the skills needed for successful delivery is through exploration (Phelps & Graham 2008: 129) which provides familiarity with technological processes (Pearson 2005).

Teachers negate the use of technology even though they are gatekeepers for the effective use and application of it in the twenty-first century classroom (Bruce & Chiu 2015). Jones and Cuthrell (2011: 83) cautions against the use of technology simply because of its existence.

Chapter V

RESEARCH METHODOLOGY

"I want to understand the world from your point of view. I want to know what you know and how you know it. I want to understand the meaning of your experience, to walk in your shoes, to feel things as you feel them, to explain things as you will explain them"

- James P. Spradley

5.1 INTRODUCTION

In the field of education, interest in one's practice should be of utmost importance and be embedded with the desire of invariable improvement (DBE 2015b: 34-35). Having an interest in one's practice, and indeed improving it over time allows one to ask questions, moreover, researchable questions. It is through this process that the researcher began questioning his own practice and subsequently has led to the study at hand (Boeije 2010: 2-3; Merriam & Tisdell 2015: 3).

5.2 QUALITATIVE RESEARCH

The research methodology employed in this study is qualitative in nature. The reason for this approach rather than a quantitative approach lies in the fact that the researcher did not make use of experiments or sought to find causal relationships, make predications or describe the distribution of an attribute amongst a population. Rather, interest was taken in how teachers interpreted their experiences, how they constructed

their worlds (Holloway 1997: 2) and how this research study has improved their teaching pedagogy.

Qualitative research "*is an umbrella term covering an array of interpretive techniques which seek to describe, decode, translate, and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world*" (Van Maanen 1979: 520 cited by Merriam & Tisdell 2015: 15). Although many definitions occur for qualitative research, all have commonalities which are: The focus is on *"meaning, and understanding; the researcher is the primary instrument of data collection and analysis*; *the process is inductive; and the product is richly descriptive"* (Merriam & Tisdell 2015: 16).

5.2.1 Focus on Meaning and Understanding

By being an active agent in the teaching and learning process, participants were able to provide an emic viewpoint by delineating the process involved in teaching and verbalising what they were feeling through the various stages of the interview process (Johnson & Christensen 2014: 228) and the observations. The role of the researcher was to understand the phenomena from the participant's perspective, and not his own (Merriam & Tisdell 2015: 14). Moreover, the researcher needed to describe how people interpret what they experienced.

5.2.2 Researcher as the Primary Instrument

A second characteristic of qualitative research is that "*the researcher is the primary instrument for data collection and analysis*" (Merriam & Tisdell 2015: 15). "*Since understanding is the*… [primary objective] *of this…* [study, one can conclude that] *the human instrument* …[would be the primary means of data collection and analysis because it is] *responsive and adaptive* [in nature]" (Merriam & Tisdell 2015: 16).

The researcher achieved responsiveness by interacting while observing the participants. Not only did he respond to signals, suggestions and motives but prompts and suggestions were proved to enhance the teaching and learning experience. Interaction with the participants created an atmosphere in which accountability of the situation was given. Rather than being neutral throughout, the research became value laden, and not value neutral.

Adaptability points to the multipurpose character of qualitative research. The researcher and participants adjusted spontaneously and creatively to the lived experience (Phelps, Sadoff, Warburton & Ferrara 2005: 82 – 83). Ancillary data was of importance in understanding group dynamics as well as interpretation of the curriculum. Although a present number of observations and questions were meant to be answered, which was flexible due to the nature of the study, limitations were not placed on either of these and auxiliary data was only limited by the researcher's sensitivity to their presence and the capabilities of the participants.

5.2.3   An Inductive Process

The study is inductive because the concepts generated from the observations and intuitive understandings gleaned from experiences. Fragments of information from interviews, observations, and documentation were used to draw conclusions (Merriam & Tisdell 2015: 15).

The literature described technology as a tool used to allow learners to actively engage and participate in the learning process. Moreover, how technology can be interwoven into the curriculum due to the pivotal role it plays in society at present. The literature gave credibility to the study, namely, by observations as learners were keen to interact when audio-visual equipment was introduced into the lesson. In this way, the research itself led to exploring avenues which was not apparent.

5.2.4 Richly Descriptive Product

The final characteristic of qualitative research is that it is a richly descriptive narrative text (Maxwell 2009: 221-222). Words and tables were used to convey what the researcher has learnt about a phenomenon.

Tables are seen throughout this paper and provide a visual element to help present ideas and relationships, patterns and give information quickly and concisely. The headings are self-explanatory. Key points are highlighted in the table which negates repetition of detail. Consistency in design is seen all the way through creating a known visual element. In addition, titles of the tables are informative and describe the contents of the table.

The researcher aimed to describe the context, the participants involved, activities of interest, quotes from the interviews, field notes and excerpts from the recordings in support of the findings of the study. All these contribute to the descriptive nature of qualitative research (Merriam & Tisdell 2015: 227-292).

5.3 PHENOMOLOGICAL RESEARCH DESIGN

Researchers from all disciplines conduct qualitative research. Different disciplines ask different questions and utilise different strategies and procedures. Qualitative inquiry is an umbrella term which researchers use to describe the organisation of phenomena and to describe diverse forms of research in various ways (Van Maanen 1979: 520). Creswell (2007) provides a framework of five approaches to qualitative research: *narrative research*, *phenomenology*, *grounded theory*, *ethnography*, and *case study*.

Researchers need to gain an understanding of a vast range of research methodologies in order to select the most appropriate design which is most suited for the intended study. Furthermore, thorough study of methodology chosen is needed to execute good research practice (Phelps *et al* 2005). The researcher undertook a topic within education, specifically the teaching and learning processes involved in the PA. Given the broad spectrum of approaches to qualitative research, the researcher chose to follow a phenomenological framework where it is understood that the study concerns itself with the perceptions of individuals (Guest, Namey & Mitchell 2013: 10). The researcher needed an approach to the study that prevented personal bias and phenomenology at the fore as it focuses solely on experiences from the participants' perspective (Merriam & Tisdell 2015: 14).

5.3.1 Essence of the Phenomena

Philosophically, phenomenology focuses on the experience itself and how experiencing something is transformed into consciousness (Merriam & Tisdell 2015: 26). Interest was shown in how complex meanings were built out of simple units of direct experience. In order to fully understand the structure of the experience, the researcher temporarily put aside attitudes and beliefs to better experience the phenomenon. With the personal attributes and beliefs of the researcher temporarily suspended, consciousness itself became heightened, allowing the researcher to see the essence of the phenomena (Merriam 2002: 7).

5.3.2 Transcendental Intersubjectivity

This concept allowed the researcher to shift his attitude when immersed in the teaching and learning process. By this shift, certain experiences became subjective. Initially the researcher underwent introspection (Gardner 1999: 43), questioning his beliefs and personal experience. This stage was imperative to avoid judgement and biases later during the course of the research (Husserl 1982: 44). The embeddedness of

intersubjectivity needed to be eliminated because phenomenology focuses on the experience from the participants' perspective and not that of the researcher (Van Manen 2010: 9; Merriam & Tisdell 2015: 14).

5.4   METHODS OF DATA COLLECTION

The phenomenological design requires a "*complex collection of data as sources of evidence for claims about the meaning of the data*" states Newton-Suter (2012: 343). The data collection methods should be comprehensive enough to engage participants. Investigating living phenomena, uses methods that encapsulate the multi-dimensionality of the human experience (Van Manen 2010: 53-76).

Collection of data came from in-depth, unstructured interviews, observations, field notes and policy documents as put forth by the DoE. In addition, attention to detail, meaningful teaching experiences and the significance of the emotional content was noted and used in writing up the report.

5.4.1   Conversations and Informal Observations

This type of interviewing was employed in the early stages of the study. The researcher needed to develop an understanding of the setting and build rapport (Cohen *et al* 2011: 81-83). The researcher spoke freely to teachers. The aim was to find participants, in addition view which teachers would be well suited for the study (Maxwell 2009: 235). The researcher made notes of the teachers while teaching PA. While in the field, the researcher engaged in conversation, explaining the research, furthermore, discussing how theory becomes praxis.

5.4.2 Purposive Sampling

The sampling technique used in this research study was purposive sampling (Boeije 2010: 35). The participants were chosen for their potential to yield insights in the phenomena being studied (Patton 2015: 40). The combination of the two factors was to maximise the value of the data collected "*for theory development by gathering data rich enough to uncover conceptual relationships*" (Netwon-Suter 2012: 350).

The initial sample included participants from two sites, namely Site A and Site B. At Site A eight participants were identified and at Site B six participants were identified. The nature of the research required a small sample. Each sampling unit was deliberately selected because they shared common characteristics (Boeije 2010: 35). All participants are teachers teaching the Life Skills and/or Creative Arts learning areas.

Due to challenges imposed by the gatekeeper(s) of both sites, the sample size was reduced to eight participants. This is still a feasible number to use in gathering data. The methods of data collection were thus confined to Site A only. Additionally, three participants in Site B were qualified and trained in various art forms, whereas only two participants at Site A had training in the PA.

Eight participants (seven female and one male) from the local educational district, ranging from 22 to 41 years old, voluntarily participated in this study. Informed consent was obtained from all the participants.

The study took place over a 10 month period dating from 07 March 2014 to 03 October 2014 with participants being subjected to ongoing observations with intermediary intervals allowing sufficient time to prepare for the lesson.

5.4.3 Unstructured Interviews

The researcher commenced the interview process when he had developed an understanding of the research question and a clear agenda of discussion with the participants. Because the researcher's understanding was still evolving, provision was made for multiple opportunities for interviews. The researcher had no prearranged questions, nor predetermined number of questions to ask before and after the observations (Johnson & Christensen 2014: 52).

5.4.3.1 Time of the Interview

The researcher arranged to meet the participants on the morning of the observation to ensure that they understood the aim of the lesson and the phenomena being observed. Subsequent to each observation, the researcher made provision to interview the participants while the experience was still 'fresh' and afforded the opportunity to respond emotionally and present the experience from their own perspective (Dickson-Swift *et al* 2007: 330-332). The lived experiences was the focal point during interviews; the concept guided the discussion. The questions were open-ended with little control over the participants' responses (Check & Schutt: 2012: 162).

5.4.3.2 Recording

The interviews were recorded using a dictaphone and transcribed for later use during the analysis phase of the study. Using a technological apparatus allowed interaction between the researcher and the participant (Cohen *et al* 2011: 469).

The researcher made a concerted effort to avoid manual note-taking due to the fact that it would be difficult to focus on the participants. Furthermore, it would distract from the development of rapport between the individuals.

5.4.4 Observations

Observation is the fundamental means of exploring the world around us (Van Manen 2010: 68). Human beings are sensitive to the environment(s) they are placed in and rely on sensory perception to provide information to make sense of the world around them (Sternberg 2009: 197-199). However, in research, observation does not occur haphazardly and transcends the boundaries of sensory perception.

The researcher chose to observe the participants with limited interaction, so as to not influence the data collected (Johnson & Christensen 2014: 34-35; Cohen *et al* 2011: 464-467). Observations were undertaken to understand the teaching methodology utilised, additionally, the interpretation of the curriculum and the enhancement of the lesson due to technology being introduced to it. This method was chosen to better understand using first-hand experience to derive meanings from their surrounding and how meaning influenced the behaviour of the participants (Merriam 2009: 20).

5.4.4.1 Video Recording

The researcher used a video recorder to record the participants' speech and behaviour (Merriam 2002: 13). Underlying nuances in speech and body language needed to be noted and other means of recording this information would not have sufficed.

In addition, the researcher used field notes when emergent conceptualisations and patterns became apparent. The process of writing field notes began during the interviews and observations but were elaborated upon soon after these activities so as not to lose the meaning of the words nor the context in which they were used (Newton-Suter 2012: 348-350).

Video data is a further extension of the 'lived experience'. The video recorder was positioned in such a way that it focussed on the teacher and the interaction between the teacher and learners during the observations. Likewise, to make participants feel more at ease during the interview session, the video recorder was place in position which did not deter or distract from the interaction and rich descriptive experiences were still delivered (Cohen *et al* 2011: 472-473).

5.4.5 Text as Data

Qualitative data exists in the form of words (Newton-Suter 2012: 350). The means of collecting these texts were from transcribed interviews, observational field notes, and existing documentation. The interviews, combined with the detailed field notes created a multitude of data, moreover, data rich with lived experiences. This data fostered the understanding of the phenomena being observed (Van Manen 2010: 9).

The types of documents that were collected included articles, diagrams, tables, textbooks, policy documents, and books on research, education and the PA.

5.4.5.1 Transcribed interviews

Representation of audible data into a written form is needed to analyse the data accurately. This audible data was collect using a dictaphone to record the respondent's voice (Cohen *et al* 2011: 469) and later used to transcribe the conversation so that the analysis process could begin (Johnson & Christensen 2014: 591).

The researcher used a downloadable freeware program called *Audacity*. By listening to an audio recording, it becomes quite daunting to note everything the first time. The program assisted in this regard. The researcher was able to alter the speed of the interviewee's voice. By decreasing the tempo, the researcher could more comfortably

record the discussion and achieve accuracy during the first attempt, thus saving valuable time.

5.4.5.2 Observational Field Notes

Observational field notes were used to remember and record the behaviours, activities, interactions and other features in the observation and interview setting. The notes that were created supplemented the conventional interview data and observational videos (Creswell 2013: 183).

The researcher attempted to be as descriptive as possible, moreover, reflective in his note-taking. The researcher endeavoured not to be too descriptive during the observations and interviews; not to deter from the ensuing phenomenon. Time was allocated immediately thereafter to capture the essence of the experience (Kawulich).

5.4.5.3 Reference Books

The written documents were used to supplement the findings. Only published works on a topic accredited by scholars and researchers were considered. The purpose of this was to convey the knowledge and ideas that have been established on the topic (Merriam & Tisdell 2015: 178).

The researcher collected information from the library and through the internet as a feasible means of generating data without the need to navigate shelves and unrelated information not applicable to this study. Databases such as EBSCOhost, Jstor, Juta, Sabinet, SAGE, and Taylor & Francis were used to locate articles written recently on the subject matter. The study encompassed a topic that is relatively new and more research still needs to be done in this area of education.

5.4.5.4 Journals

The researcher kept a journal that he was able to update with his feelings, plans of improvement and approach to the data analysis. Being able to retrace one's steps proved helpful as it contributed to the emergence of new ideas, interpretation of paths and making connections between early ideas and emerging themes. It was also beneficial to the researcher as it helped build an argument for the emergent themes and categories reached at the end of the study (Boeije 2010: 70).

Written ideas aided in sorting data into categories, assisted in defining properties and helped to discover the relationships among categories (Newton-Suter 2012: 348-350).

5.5   METHODS OF DATA ANALYSIS

Qualitative researchers' approach to analysis of data requires creativity. The goal of this data analysis within a phenomenological approach was to uncover *"themes that are embodied and dramatised in the evolving meanings and imagery of the work"* (Van Manen 2012: 78). An analytical framework was used to conceptualise categories and descriptive themes (Newton-Suter 2012: 346).

The conceptual framework was construed by the researcher apropos to the literature on the various topics, to explain the phenomena being studied.

The interviews, documents and field notes produced a large quantity of information to filter through. The data required critical examination, careful interpretation and synthesis. Analysis of rich descriptions provided new perspectives and its analysis of interconnected themes provided invaluable insights (Newton-Suter 2010: 352). This depth led to the understanding of the complexity of educational practice.

5.5.1 Bracketing (Reduction)

The word *'reduction'* is used in a philosophical sense denoting *'the return to something of a more primordial mode'* and not *diminishing*, as one would assume (Cohen *et al* 2011: 556). "*Reduction is the process of continually returning to the essence of the experience to derive inner structure or meaning in and of itself*" (Merriam & Tisdell 2015: 27). As themes emerged through the process of interviews and observations, the researcher reverted to the research aim and questions. Although data collected from the research methods led to emergent themes, focus on the research aim needed to be maintained throughout.

5.5.2 Horizontalisation

The researcher made use of *horizontalisation*; a process of examining and treating the data as having equal value at the initial stage of data analysis (Moustakas 1994: 96). Through this process there is an interlinking of phenomena, participants and conscious experience. In explicating the phenomena, qualities were recognised, perspectives granted equal value and constituents of experience were thematically linked.

5.5.3 Imaginative Variation

"*Qualitative research…* [focuses on understanding] *how people interpret and make sense of their experiences*" (Merriam & Tisdell 2015: 24). Due to the phenomena being observed, the researcher made use of the concept of *imaginative variation* in which participants were asked to critically reflect on their experience and mention what the outcome would be if certain aspects changed (Moustakas 1994: 99). Comparisons between the experience at and the hypothetical situations were used to clarify what the researcher observed.

Furthermore, the concept assisted in validating and ensuring credibility with regards to the findings. *Transferability* would correlate with this in that it speaks of applying the findings to multiple contexts. Therefore, if the imaginative variation creates a scenario where people would act similarly, then it would imply that if given the context, the same or similar behaviours would be observed providing validilty and credibility to the research findings (Cohen *et al* 2011: 195).

5.5.4   Reliability and Validity

Interviews were the primary means of gaining first-hand information from the participants (Cohen *et al* 2011: 409). It is assumed that human beings are capable of higher-order thinking, thus, information elicited by the participants is of value, moreover, quality data. Quality data in combination with quality literature helped to make sense of experiences which would be enigmatic (Merriam & Tisdell 2015: 112).

5.5.4.1   Transferability

Transferability refers to applying the supporting evidence of the findings to other contexts (Cohen *et al* 2011: 195). The researcher achieved this by giving a detailed account of field experiences in which patterns were put into context; this enabled the alignment of findings with other contexts, namely research conducted on educational technology. The comparison across other contexts also yielded similar findings which increased the concept of transferability (Toma 2006: 414-415).

5.5.4.2   Dependability

Akin to *transferability* is the concept of *dependability*. This means that if the research was repeated the same findings would occur (Toma 2006: 416). Given the ever-changing society and perspectives; achieving the same results, with the same participants, in the same context would yield the same results as seen in the conclusions of this study that technology assisted in the teaching and learning process,

creating a better classroom environment and atmosphere fostering the love of education.

5.5.4.3 Confirmability

The researcher was the primary instrument for data analysis. The findings were mediated through this human instrument (Merriam & Tisdell 2015: 15). It was impossible for the researcher to be completely objective. Through the means of introspection, the researcher underwent mental and emotional analysis on various subjects/topics to avoid bias (to a certain degree) and presenting the findings as accurately as possible (Husserl 1982: 44).

5.5.4.4 Credibility

The research findings can be deemed trustworthy and believable due to the disclosure of confidential information by the participants, quality of the data, the analysis of the multiple sources of data, interpretations, convergence of evidence and control of bias (Toma 2006: 413-414).

5.5.4.5 Crystallization

In this study the researcher did not intend to seek a definitive truth as would be the case with triangulation. Instead he adopted crystallization as a means to recognise the multiple voices and experiences of the participants in this research study (Ellingson 2009: 22).

In this way the researcher combined a traditional qualitative study with elements of a post-modern approach, crystallization (Ellingson 2009: 22).

In this methodology the researcher (1) used a variety of collection tools of date, (2) provided opportunities for participants to review the data collected and respond to the findings, (3) consistently allowed the diverse voices of the respondents to be heard and

(4) in the presentation and coding of information has avoided oversimplifying the lived experiences of the participants (Ellingson 2009: 40-44).

5.6   QUALITATIVE DATA COLLECTION AND ANALYSIS OCCURS SIMULTANEOUSLY

Data collection and analysis proceeded simultaneously (Newton-Suter 2012: 360-361). This affected the ongoing findings, the types of data collected and collection methods (Guest, Namey & Mitchell 2013: 7). In addition to making field notes, the personal notes made by the researcher become an integral part of the collection and analysis process (Creswell 2013: 183). These notes helped trace the thinking of the researcher and offered possible avenues of exploration (Boeije 2010: 70).

5.6.1   Interviews

There was great flexibility in the data collection and analysis process. From the initial interviews and observation, the researcher reviewed his field notes and recorded footage. The researcher then analysed the data and reconstructed the questions to be asked at the subsequent interviews. In keeping with the idea of unstructured interviews, the researcher lead the discussion in such a way that the participants responded in a manner that the research questions could be answered (Johnson & Christensen 2014: 52).

5.6.2   Recording Devices

At first the participants were aware of the video recorder and dictaphone during the interviews and observations. The researcher attempted to place these devices out of sight in order to create a relaxed atmosphere in which participants could discuss freely and develop rapport without bias (Cohen *et al* 2011: 469).

5.6.3 Personal Notes

In order to keep a detailed record of events and possible avenues of exploration, the researcher incorporated these after interviewing the respondents.

5.7 ETHICAL CONSIDERATIONS

Ethics are a set of moral principles that governs a person. It refers to the moral deliberation, choice and accountability on the part of the researcher throughout the research process (Cohen *et al* 2011: 377, 442 & 471). Qualitative research involves interactions with individuals thus there are ethical implications for both the researcher and the participant.

5.7.1 Ethical Clearance

In order to ensure that research is beneficial and does not harm others, the researcher applied for ethical clearance. Due to the nature of the study, the researcher needed to interact and interview adults. During the year 2014, the researcher submitted documentation to the university in question to acquire ethical clearance. Clearance was granted with the number H/14/ART/MUS-001.

5.7.2 Informed Consent

After the informal interviews the researcher approached several individuals and invited them to an information sharing session in which they were informed of the nature of the study, direction it may take and the data collection methods that would be employed. Those present were not coerced into participation and if they indicated that they were willing to participate in the study, they were free to withdraw at any time without being penalised (Cohen *et al* 2011: 77).

5.7.3 Anonymity

All participants were given reassurance that their identity would remain private. No identifying information whether individual or institutional would be revealed in either writing or made public using other forms of communication. All identifiable information has been removed from this research (Cohen *et al* 2011: 91).

5.7.4 Confidentiality

Participants had a reasonable expectation that the information provided to the researcher would be treated as confidential. Assurance was given that the information would only be beneficial to the study and that it would not be shared with anyone else (Cohen *et al* 2011: 92)*.*

5.7.5 Rapport and Friendship

The researcher developed rapport in order for participants to feel at ease during the study (Cohen 2011: 81-83). The researcher maintained good ethical practices by being professional, for example, by addressing the participants by their title and surname, thus avoiding a situation where participants believed friendship had formed.

5.7.6 Intrusiveness

The researcher put measures in place not to intrude on the participants' space, time or personal life. Interviews were scheduled during working hours and carried out at their place of employment, which meant that there was no inconvenience of travelling to a location to meet the researcher. Interviews and observations did not impact on the participant's employment as it was scheduled during the time allocated as per the timetable.

5.7.7 Data Interpretation

The researcher analysed the data in a manner that avoided statements taken out of context, misinterpreted or that led to fraudulent analysis. Data collected through the various methods was used fairly to present findings which reflected the voices of the participants (Ellingson 2009: 42-43).

5.7.8 Reciprocity

The researcher expressed his appreciation by providing the participants with refreshments after the observations and at gatherings where all mingled freely in a relaxed atmosphere.

5.8 CONCLUSION

Thinking employed in qualitative research contrasts to that of quantitative research on many dimensions (Johnson & Christensen 2014: 29-58). Thinking generates questions that need answering with a methodology which needs rich sources of data. Additionally, creativity for collection methods and analysis is emphasised; more so if one is researching the PA (Newton-Suter 2012: 343).

The methodology is termed "emerging" and "crystallizing" as the researcher recognizes that there is not only one truth. Moreover, the design was not finished at the outset and strategies for data collection were open and depended on the context (Boeije 2010: 70). Revisions of the type of data collected and methods of collection occurred often throughout the research process (Newton-Suter 2012: 348-350).

Data collection and analysis occurred simultaneously. Ongoing findings affected what types of data were collected and how it was collected (Newton-Suter 2012: 346). Manual note-taking throughout the study became an important data analysis strategy. The field notes assisted in the conceptualisations that answered the research questions (Merriam & Tisdell 2015: 227-292).

The process of analysing qualitative data required flexibility, imagination and creativity in thought (Newton-Suter 2012: 343). Patterns and themes needed to be identified using an inductive approach (Merriam &Tisdell 2015: 16). Moreover, the study was based on phenomenological philosophy, which necessitates that the data analysis be from the perspective of the participant and not that of the researcher (Van Manen 2010: 9). The researcher needed to be open to multiple possibilities or ways of thinking when answering the research questions, moreover, being multi-perspective.

Validity and credibility were achieved by using crystallization – utilising the interviews, observations and known published sources of information. Transcription of interviews and subsequent interviews ensured that the information supplied during the interview was accurate and in the words of the participant.

Chapter VI

CLASSROOM PRACTICE WITH TECHNOLOGY

""Research is creating new knowledge."

- Neil Armstrong

6.1 INTRODUCTION

The South African Schools Act of 1996 (DoE) recognises two categories of schools: *state-controlled* and *independent* (also known as private schools). The school in this study is not owned or governed by the state, but is owned and operated by a church. The school is a privatised primary school in the Northern suburbs of the Port Elizabeth district.

Prior to 2013 the school followed an American-based curriculum. As the DoE implemented the CAPS across the country in 2013, so too did the IP embrace this change in the curriculum reform. The SMT agreed to merge the old curriculum with the new curriculum. Once reviewed, the committee allowed for CAPS to be implemented. This change in curricula was due to learners furthering their basic education and grade seven learners would phase out and attend a secondary school that followed the school curricula legislated by the government. Consultation with the FP teachers resulted in the committee deciding to keep the current curriculum of the FP. This decision has resulted in learners entering grade four not having sufficient experiences in the three PA disciplines.

This was confirmed by the grade four teacher, Mary[1]:

> I do not know that much about dance, music and drama but when the learners enter grade four they have no clue what I am talking about. They enter a new phase, with new subjects. They do not do the same work as they did in grade three. I am not sure what they learnt for music but it did not help me at the start of the year.

The FP does not follow the curriculum as put forth by the DoE (2012b). The FP follows an American curriculum in which only music is offered; this only during the final term of the academic year. This is approximately only ten weeks of the entire year in which learners receive some form of PA instruction. A review of the music program showed that it only focussed on two elements of music, namely the tone colour, as well as mood.

The time allocated to the music program in the FP consisted of an half an hour which was introduced on each Friday of the fourth term. Gretchen confirmed this by sharing her timetable reporting that:

> Teaching Creative Arts on a Friday is easier because the learners are tired and they don't need to think about it; it is not like Maths. Friday is also a short day so we can have more fun activities and not teach so much on this day.

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[1] Not her real name. Throughout this chapter the researcher will use pseudonyms to protect the identity of the teachers who participated in this study.

Time allocation to the Creative Arts in the IP was up to the discretion of the teacher and not according to the departmental stipulations (DoE 2012c: 10). Primrose mentioned that:

> Life Skills is very demanding and working out lesson plans is not easy. I don't understand all the different art things that the department expects me to teach. Even though I teach Life Skills; I spend more time teaching the other components and give the learners any activity to have marks to capture on the system.

In grade seven the time allocated to the Art forms Dance and Music, which was the path chosen by the school given the expertise of the teacher, each receives an hour per week; this is in accordance with the recommended time allocation as stipulated by CAPS (DoE 2012d: 7).

According to the DoE (2012d: 9) selection of staffing should be based on the following:

o Teachers should be capable of teaching the art forms
o If teachers are selected without prior arts training, the SMT and the School Governing Body (SGB) is responsible for the intensive training of the teacher(s) in one or more art forms.

During the pre-interview stage, Matthew had briefly mentioned that:

> I had been dancing for approximately a year already before the implementation of CAPS. The grade seven's are taught concepts of dance and not actual dance routines. Although when I received some training while studying, they focussed on actual dance routines and never taught us about the concepts as it is stated in the textbook.

6.2 THE TEACHERS' RESPONSES AS CRYSTALLIZATION

6.2.1 Training in the Performing Arts disciplines

It is generally accepted that teachers receive quality training before being independently placed in a classroom. However there is no consensus as to what constitutes *quality* teaching. All the participants had training in education in some form or the other. Yet, the training received was not adequate and did not prepare at least six of the participants.

Lucy who is the youngest in the group and an enthusiastic grade two teacher had this to say:

> In the B.Ed course we had a module. However we were only introduced to
> the elements of the arts forms. We did not do any content and methodology.
> I therefore did not feel prepared to teach the curriculum.

It was concluded was that the teachers in the FP required additional training from the commencement of their careers. The tertiary institutions they had attended did not prepare them for classroom practice. This is especially evident in the case of younger staff members who qualified since the inception of the new curriculum in 1998.

Two participants had completed one year courses offered through a local Early Childhood Development institution located within the metropolitan. Two of the participants have national diplomas in educare training. PA training was not included in any of these courses.

Monica, who qualified thirty years ago and is the oldest in the group, had a different experience in pre-service training. She said:

> When I was at the teachers college, one could major in either music or visual art. Our lecturer concentrated on music theory, so we did not do any of this… erm… stuff we find in CAPS.

She further added:

> Less than ten years ago I participated in a three Arts Initiative that focussed on practical implementation of dance, drama and music. The course consisted of assignments, demonstrations and reflections on practically carrying out what we were taught in the classroom.

Matthew holds a B.Mus(Ed) degree. The course material of this undergraduate degree comprised of not only music but the other two PA disciplines as well. Although he only majored in music he has knowledge and some practical experience of dance and drama as well. Matthew concluded his training by saying:

> The instruction I received from the lecturers only assisted to a certain extent. The objectives of the Arts do not change but only the wording differs from curriculum to curriculum.

Matthew and Monica have been involved in various Arts programs in the school such as, arts and crafts, recorder lessons, coordinating the school plays and concerts, and training learners for the various items. Both teachers have undergone instruction in Ballroom and Latin American dance. The dance program extended throughout 2013 and 2014 culminating in selecting learners and both educators to participate in a

professional dance competition held in the North-West province. During the course of 2014 Rachel, the grade R educator, joined the dance classes as well.

Creative Arts is a complex subject, more so if each discipline within the subject is analysed and the pedagogy of each is learnt.

6.2.2   Initial Approach to Teaching the Performing Arts

Prior to the study, only music was offered at the institution. The exception being that dance was offered as an extra-curricular activity and later as an art form chosen as per the curriculum for the grade seven learners (DoE 2012d: 10).

Teachers within the FP lacked a general understanding of the basic underpinnings of music education. Due to this they relied on worksheets sourced from the internet to supplement the content in workbooks. The participants made no concerted effort to develop professionally. Their teaching pedagogy can be described best as narrative teaching whereby learners would listen to the teacher. This form of education negates the creative and interactive nature of music itself.

Naomi, a grade three teacher, shared the following:

> I usually start the year by letting the learners sing familiar songs as this is the easiest way to begin. I am not so confident in the way I teach music. Although I do sing in the worship team at my church, teaching is different from pure singing.

Due to the nature of Matthew's training, the educators of the IP sought assistance from him. He always was eager to assist as this was his area of expertise, more specifically, music education. Primrose goes on to say:

> Matthew would come to my class after school and teach me how to draw the music notes and how the stave works. He tried different ways of doing it and I chose the one that I understood the best. He would bring his instruments for me to use.

> He would help me to come up with ideas for assessments and provided rubrics for me to use. He would tell me what he expects the grade six's to be taught so that it makes his job easier the following year.

Mary seemed to be working well on her own and reported that she sought no help from other teaches. This too was confirmed by Primrose, Monica and Matthew.

Monica has always gravitated towards the Arts and thus her initial form of instruction was appropriate from the onset. Monica stated:

> Growing up being in drama performances and singing in the choir has helped me to be creative in class. I later started playing the recorder and the guitar. This helped me especially when I taught music because the guitar is a versatile instrument and can be taken anywhere. I even used it to teach the alphabet in Afrikaans.

6.2.3   Introduction of Technology into Creative Arts Lessons

There was a great variety in the methodology used to introduce technology in the classroom. A youthfulness amongst the staff members indicated that the use of technology during lessons would not be problematic; the integration thereof would prove more challenging. Monica had this to say:

For me technology in the classroom meant, the OHP. The media that we were taught to use was this, writing on newsprint and using the blackboard to explain concepts. I am not accustomed to using cellphones in my lessons.

In contrast, Rachel disagrees:

I feel very confident in using technology in the classroom. I made use of my cellphone and connected my shox to it. This helped me to understand what I was expected to do during the observation.

The participants did not intend on using technology exclusively, as this was impractical due to the context of the school. They began by introducing new ideas into the classroom such as using a kitchen timer to time activities and playing Art music during the day to help learners to focus.

Participants introduced technology on a small scale: such as playing sound clips, watching a section of a film and gradually moved towards the use of the computer laboratory itself. By starting with a manageable form of technology, the participants were able to establish protocol in which learners did not become dependent on the technology but saw technology as a part of the lesson to enhance learning.

Consensus was reached between the participants to make known to the learners the expectations of each lesson, focussing on the responsibility of safeguarding the technology and taking ownership of one's own learning. Gretchen was particular about this and stated:

Younger learners can be wild and play around with expensive things that might just break. I don't have money to replace the equipment and the school itself does not get funding for this. I need to train my children now

because when we do you other forms of technology they need to respect
that.

6.2.4 Frequently Used Technology in Creative Arts Lessons

The participants, most of whom are frequent technology-users, overlooked how to harness technology as a tool to assist in the teaching and learning process. Subsequent to the initial observations, the researcher gave workshops in which he shared the types of technology one could incorporate into a lesson.

The most practical application of technological devices made use of in the classroom was the smartphone, speakers and laptop.

Participants most frequently made use of their smartphones as a music player due to one of the functions of the device itself. The speaker of the apparatus is not powerful enough therefore an external sound device was attached to the smartphone. Lucy, a frequent user of this APP said:

> I have a lot of music on my phone and this helped me to play music that the
> learners know but also introduce other songs as well.

Second, is the use of a laptop in the classroom as a tool for teaching and learning. Participants used laptops to play videos clips to learners. These videos were based on the content needed to be covered throughout the term. The clips also served as an extension of the classroom as the skills learnt in the lessons were placed in a real-life context. Lucy who teaches the youngest of the all the learners concurs with this statement:

Learners did not realise that I was actually teaching them. I just made use of the laptop to do the teaching for me. Learners enjoy cartoons and they really enjoyed seeing characters like Donald Duck on the screen. They did not realise that the music was playing in the background.

Finally, the use of the computer laboratory goes beyond that of a tool but as a method of instruction itself. Use of the laboratory was utilised by grades four through to seven. Participants acted as facilitators in this setting as the roles of teacher and learner shifted. Learners were to explore the internet, gather answers to questions, make use of virtual instruments and find videos on YouTube of relevant dance, drama and performances. Primrose stated:

I don't understand everything about computers but I am happy that I and the computer teacher worked together on this. He helps the learners with the more complex procedures that I do not understand. In this way we cover both the computer syllabus and Creative Arts syllabus at the same time.

6.2.5 Technology Assisting in the Instruction of Dance, Drama and Music

Given that culture is entwined with technology (Haferkamp & Smelser 1992: 2-4; Cline 2014: 3), the use of the medium becomes an integral part of the pedagogical process in the twenty-first century Arts curriculum (Scheffler & Logan 1999; Whitehead *et al* 2013: 21–24). Technology was utilised as an enhancer to the lesson. Thus, it assisted in focussing on the objective of the lesson and did not deter from it by becoming the focal point. Once the content of the lesson was covered, such as establishing basic concepts, a form of technology made use of to bridge the gap between the concepts and the application thereof.

Naomi who had a minimalistic approach to technology integration in her lessons, had this to say:

> I used technology at the end of my lessons to give learners an understanding of how what they learnt fits into the broader picture of all music. I did not want to make technology the focus of the lessons because I needed to teach what the workbook required me to do.

6.2.6 Adaptation of New Teaching Methodology

The adaptive methodologies employed by other teachers varied greatly from the onset. When technology first appeared in the classroom, the participants overlooked the objective of the lesson and focussed solely on the technology. As the study progressed, they developed an understanding that learning occurred through all the methods utilised in the teaching and learning process.

After the initial observation, in passing, Gretchen asked, "Did I do it right?" The researcher explained that the study does not encompass carrying out any procedures that are "right" but the methodologies used are of importance in this study.

Participants incorporated new methods into their conventional teaching methodologies. In the FP it meant supplementing worksheets with other sensory stimulus as well.

As an introduction to the new methodology, the researcher provided Rachel with a YouTube video depicting the instruments used in an orchestra. She had this to say:

> The learners were singing along to '*If you happy and you know it*' but the different instruments were playing it and the learners could hear what it sounded like. This helped for when they completed the worksheet later.

The example above was from the first technology-infused lesson that Rachel gave. The importance of the study was not to change the curriculum but introduce new ways of instruction using technology to enhance the process of teaching and learning.

Mary was not as keen as the other participants. She stated:

> It's nice to use videos and other things to help with teaching but it takes a lot of time to prepare lessons and find things to make it interesting. I teach NS/Tech also and don't always have a lot of time to prepare lessons using laptops.

6.2.7 Ongoing Professional Development

Among the answers supplied, the one answer that was most relevant was the fact that participants took the time, sat down and planned the lessons according to the abilities of the respective learners they would be teaching. Participants were autonomous in their planning and catered to the needs of their learners while using the classroom to create a conducive learning environment.

Noami had this to say about her development:

> I did improve in some areas of teaching. I don't think that… uhm… technology has made me a better teacher. It gave me time to sit down and look at what the learners were learning.

The realisation had not become apparent to Naomi that she was engaging in reflective practice. This is an exercise that the participants engaged in regularly; whether they realised it or not. Reflective practices initiates self-assessment. Self-assessment could include finding solutions to discipline, pedagogical challenges or inventive ways to content coverage. The reflective questions assisted the participants in seeing how they would approach situations differently in the future. Monica commented that:

> I will use less classical music and more secular music in future to help the learners understand how to use their bodies to move. When they heard classical music they immediately thought of ballet style dance but that was not the objective of the lesson.

The only known PA workshops occurred during the third quarter of 2014. The Curriculum Development Unit within the Port Elizabeth district, offered a twelve week course to train teachers in the various art forms. The workshops were offered twice a week on a Friday (after school) and a Saturday respectively. Only Monica and Matthew attended these as the workshops were focussed exclusively on grade seven.

6.2.8 Recommendations from Participants

Lucy recommended:

> The school needs to start getting more resources for us to use. The things in our classrooms are resources that we bought ourselves.

Mary stated:

> It would be nice is if a laptop was made available for the teachers to use in their classrooms.

Primrose mentioned:

> Because we are a private school we should have the latest resources and technology. Not all the computers in the lab even work. We should be using tablets to teach.

Matthew recommended:

> The teachers need more training in Creative Arts. I help where I can. Teachers need to understand the basic concepts of all the Art forms. At present, they don't.

6.2.9 Why Technology Should Be Integrated in the Curriculum

Technology touches every aspect of the lives of learners and will become increasingly more important as they complete their scholastic formation (Cline 2014: 57-82; Latham & Gross 2014: 46-47).

Technology skills become indispensible as learners progress from grade to grade. Primrose who took full advantage of the computer lab said:

Computers allow learners to be creative and use imagination. The internet helped learners to find pictures and videos on drama performances. They copied these and added their own flavour to the performances.

The underlying skills that learners were developing were mouse skills, typing skills, navigational skills and critical selection of content relevant to the different PA disciplines. These skills were all embedded in exercises and demonstrate the cross-disciplinary nature of the PA.

Matthew and Monica both made use of video technology to record learners' dance performances. Monica goes on to say:

I recorded the learners dance performances and viewed this at home. I then assessed them which felt fairer once I had the opportunity to view performances more than once.

Due to the time limit placed upon the PA, it would be essential for performances to be recorded and assessed later. The timetables of the participants in the study showed that Life Skills/Creative Arts was timetabled closer to the end of the day. Fatigue sets in as the day progresses. Teachers would find it difficult to assess fairly if they do not concentrate on performances. Video-taping the performances reduced the stress place upon the teacher. Additionally, this application of technology circumvents bias and allows time to compare routines between groups and/or individuals.

With the large number of learners no longer attending concerts it becomes imperative to make classical music accessible to them. Classical music from CD's, as well as YouTube makes music accessible to the teacher and the learners.

Gretchen stated:

> I don't know a lot about classical music but the videos helped me to introduce learners to the different instruments and sounds they make.

With regards to drama education, Naomi commented:

> Googling plays helped me to come up with ideas for the concert. I chose a play about animals. Videos helped me to see how the animals walk and speak.

The internet search of characters helps the teacher to understand the mannerisms of a character. Learners are not always acquainted with the attributes of a character, nor are teachers. By viewing other drama performances the teacher becomes the MKO, instructing learners how to behaviour in their roles.

6.3   OBSERVING THE TEACHERS IN THE CLASSROOM

6.3.1 Change in Teaching Methodology

The researcher observed the teachers while they were giving lessons. Technology was incorporated into each lesson. Furthermore, the researcher was afforded the opportunity to observe the entire school while they rehearsed for their Christmas concert. Some items made use of technology such as microphones, lighting and sound effects.

As stated previously, when the study commenced, the pedagogy could be categorised as narrative teaching. Learners would sit and listen to the teacher as he/she went through the lesson. The learner participation was at a low level and

limited to responding to question posed by the teachers. In fact lessons were teacher orientated and not learner-centred. As the study progressed, the participants grew in their approach to learning. Over time they blossomed from being hesitant to displaying greater confidence.

The use of technology made it easier for the participants to change and evolve their preferred teaching style. PA is inherently creative, collaborative and interactive. This is the only approach that is needed to teach the disciplines as well

6.3.2   Engagement and Motivation

The use of technology in the classroom enhanced both the learners' engagement and motivation. Learners who were lethargic and not interested in the beginning of the study had changed at its conclusion. This motivation and engagement can be ascribed to the content that was learnt or new skill(s) gained by the incorporation of technology.

The teachers of the IP chose to begin warm-up exercises for dance and drama with Zumba. Mary had this to say:

> The warm-up exercises caused such an excitement that I found it difficult to
> get the learners quiet after the exercise.

Learners who normally were absent on a Friday in the FP now came to school. This was confirmed by checking the attendance register kept by the participants.

The interactions promoted positive attitudes during conflict management. Lucy stated:

While the learners were jumping around pretending to be a ball, Johnny[2] accidently bumped Marissa[3]. Johnny stretched out his hand to help his classmate up. The lesson continued as normal.

An increase in learner involvement in learning activities was observed. Once the use of new methodologies was established, learners desired a similar approach in other learning areas as well. It is this observation that has led the researcher to conclude that technology as a tool can be used effectively in the classroom to facilitate the teaching and learning process.

Matthew made use of a number of collaborative activities in music. He goes on to say:

> I feel that learners understood the elements of music better once they worked in groups. I used classical music as well as a number of jazz pieces.
> I tried to incorporate South African music as well so that learners could tell the differences in style between European music and African music.

Due to an increase in learner engagement, fewer behavioural problems were observed. Those who defaulted were excluded from activities. Learners did not want to be excluded from the activities so they displayed better behavioural traits.

6.3.3 Improved Instructional Material

Technology has the opportunity to expand instructional resources beyond comprehension. The possibilities are endless for the types of materials made available. The teachers of the FP made regular use of sound and video to connect subsequent lessons. Rachel stated:

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[2] Not his real name
[3] Not her real name

After I gave my first few lessons, I used the idea of animals to link everything together. The learners walked and made sounds like animals, they drew and coloured in animals and sang songs about animals.

Naomi commented:

I found better worksheets from the internet. I am not saying that the worksheets we use are bad but the ones on the internet had more variety and the layout was better. I could use ideas from it for the next lesson.

Mary mentioned:

Some people came to the school and did a play for the learners. It was about drug abuse and HIV/AIDS. I then went back to look for more videos on plays about this. The learners then did a performance about social issues like violence and drug abuse.

Primrose introduced cultural weddings as an assessment for the grade six learners. She allowed learners to view wedding ceremonies from around the world; this did not include any African ceremonies. According to the criteria learners had to prepare traditional food, wear traditional attire and present a traditional dance. One group required music to dance to; without the projection of sound, the dance would seem out of place. Primrose' statement agreed with what the researcher observed:

In the coloured culture we use lots of music because that is how we express ourselves. It is a tradition to enter the hall dancing. Uhm…people from other African cultures clap and sing.

6.3.4 Emerging Patterns in the Technology-infused Classroom

6.3.4.1 Application of Multiple Intelligences

The twenty-first century Arts curriculum draws from a range of competencies; with this comes an increasingly long list of approaches from which to choose. Subconsciously the participants employed various learning theories to transmit a body of knowledge. As the development of the theories became apparent in the observations, the interrelatedness impacted on instructional design of activities. The most prevalent among these was the Multiple Intelligence theory.

The participants used certain approaches more often as it appealed to learners. It was a flexible approach to good teaching practices. The participants offered a variation in technology-enhanced activities to accommodate different intelligences. The table below is an example of the types of activities completed during the study.

Table 6.1   Incorporation of Multiple Intelligences in Teaching Pedagogy

Grade	Intelligence	Incorporation into lesson	Method of Demonstration
R	Musical	CD's	Sang along to nursery rhymes
1	Musical	CD's	Identified which instrument made the sound
2	Spatial	Video clips	Painted a picture based on the story
3	Linguistic	Worksheets sourced from the internet	Wrote a short description of a character on the page
4	Interpersonal	Group work	Performance of a drama piece focusing on a societal issue
5	Intrapersonal	Computer	Wrote a reflective journal entry on a drama performance
6	Bodily-kinesthetic	CD's	Dance performance
7	Bodily-kinesthetic	Video recorder	Dance performance

6.3.4.2 Creation of Authentic Learning Environments

Authentic Context

The participant sought to engage learners in meaningful learning environments. The authentic context reflected the knowledge and skills that will be used in real life. Real-life models were used to supplement areas where the participants were lacking. The technology-infused learning environment provided a sustainable and complex setting. This complexity within the environment itself made for subsequent lessons to be built upon the concepts later. Rather than present one element at a time, the environment gave a holistic view of the concepts of the PA.

Construction of Knowledge

The technology-rich classroom fortified the teaching pedagogy by actively engaging learners in middle and high order level thinking.

As learners engaged in activities they constructed their own knowledge. This was observed in the discussions and reflective exercises. The conclusion was that the mediums used demonstrated that often learners' conceptions of the world are more detailed than what they can represent on paper. The participants observed this phenomenon and included more of these practices over time.

Authentic Experiences

If the technology was removed the experiences would be less memorable. The apparatus used appealed to the learners' sensory perception and this kept learners actively engaged and motivated throughout. The PA is inherently interactive; the participants capitalised on this characteristic and created lessons that contrasted the conventional method of instruction to which learners had become accustomed.

6.3.4.3 Shift in the Role of the Teacher

The role of the participant changed as the learners became immersed in the concepts. The technology-infused environment fostered independence in the classroom. The setting became learner-centred, no longer teacher-orientated as was the standard. This was mostly observed with in the IP and grade seven classes.

The teacher thus served the role of a facilitator, offering hints and providing feedback. The shift does not imply that the role of the teacher became obsolete but placed a greater emphasis on learning. The teacher needed to evaluate what role they were functioning in.

6.3.4.4 Professional Learning

The technology enhanced Arts curriculum presented a crucial point in concomitant pedagogy of the twenty-first century teacher. Of importance was the teacher adapting their methodology to accommodate technology and the learning styles.

The professional development of the participants came mainly from the researcher who provided the information and ideas for classroom activities. Collaboration between colleagues was not evident; Mary is one example who ompted to work in isolation. The only exception to this was Primrose and Rachel who collaborated and shared ideas for classroom activities with each other.

"Learning" (in this context) would imply that something of value has been learnt through these experiences. The researcher documented the creative growth displayed by the participants. As the weeks went by, the participants displayed a greater sense of willingness to take creative risks in the classroom. The PA is inherently creative; the creative aspect is not confined to the learners only but extends to include creative practices of the teacher as well.

6.4   CONCLUSION

The art of teaching in the twenty-first century has numerous interconnected skills. These teacher-orientated skills are developed over time through extensive analysis and practice.

The participants in this study displayed growth in the area of teaching methodology. While many of the participants are under qualified, the integration of technology made instruction easier. No longer was the teacher seen as the MKO but also as a facilitator in the classroom whereby knowledge, skills and values are learnt through the use of technology as a medium of instruction.

The participants came to realise that technology can be harnessed to assist in teaching and learning process. Learners need not be taught everything upon reception at the school; many learners are accustomed to using technology and in many cases are owners of more advanced technologies than the participants themselves. Participants needed to modify and mould their teaching practices to suit the needs of the learners and integrate technology so that learners are better prepared for the future.

Chapter VII

CONCLUSION OF THE STUDY

"When educating the minds of our youth,

we must not forget to educate their hearts."

- Dalai Lama

7.1   INTRODUCTION

This study was conducted within the context of transformation in education policy. The DoE recognises that ICT integration in schools is inevitable (DBE 2015b:17-19). In 2015 the DBE (: 17) released a draft national strategy on e-education. This points the way to the future when tablets and interactive whiteboards will be readily available in the classroom.   Throughout the country, a number of schools were targeted for pilot projects during 2015. These were to assess the accessibility and viability of e-education. Furthermore, discussions at the *Operation Phakisa* conference (DoE 2015) highlighted professional development of teachers in the areas relating to ICT integration.

Within the context of e-education, this study focused on the integration of technology in the creative arts classroom. The teachers who participated in the study did not use technology in the PA classroom prior to the study. The teachers also lacked confidence to teach PA and were therefore hesitant to be innovative.

7.2   MODERNISING CLASSROOM PRACTICES

7.2.1   Pre-observational Deductions

During the initial observation of the teachers, it was noted that many teachers used a narrative teaching style. Passive learning accompanied the teaching methodology.

The research findings revealed a divergence in the use of technology in the performing arts. This divergence was apparent across the different art forms, among teachers and even within individual teachers' use of technology.

Added to this the IP and SP teachers did not integrate the technology at their disposal. Yet they presented lessons that were more interactive were more interactive than that of the FP.

7.2.2   Moving towards a Twenty-first Century Classroom model

The incorporation of technology alone did not ensure that a change in classroom practice would take place. Technology set in motion a change to how the PA was addressed. The comprehensive PA curriculum includes skills such as collaboration, discovery learning and the development of technology skills. The lessons presented at the beginning of the study made use of many conventional methodologies but in time, the majority of the participants allowed the learners to take ownership of their own learning and a shift in the role from teacher to facilitator become more evident.

The most ambitious of the participants was the grade five and six teacher who utilised computer technology, integrating it and consolidating PA concepts through it.

7.3   INTEGRATION OF TECHNOLOGY

From the interview responses it became clear that to a certain degree a shift in perspective had taken place. Given the authentic environments created, the participants' view of the PA changed with regards to delivery methods. Through reflection they realised that knowledge does not only come from textbooks but through collaborative efforts as well.

7.3.1.   Dance

Only the IP teachers adopted and interacted with the dance syllabus. The technology integration with regards to dance included CD's, videos, video recorder, laptop and speakers. Although this seems as if quite a few technological devices had been used, the creativity aspect was at a low level. The participants made use of similar techniques in approaches. Creativity from the participants were lacking, learners were given the opportunity to become more creative as they become autonomous in designing routines only directed by the assessment standards and the choice of music.

One participant in particular made no effort to go beyond her limited competences to acquire the skills needed to teach the discipline. She relied on videos to provide the instruction for her and in this way resorted to a narrative approach.

The two participants who had some dance experienced integrated technology very sparingly into the art form. The three types of technology main apparatus were laptop, speakers and video recorder.

7.3.2 Music

All the participants taught music lessons. The participants showed a greater propensity to engage with this art form which was familiar to them. The popularity was due to a combination of factors. When teaching the Arts curriculum in the FP other art forms can easily be integrated into music, through action songs (dance and drama) and listening activities (dance and drama). Two of the SP teachers are trained in music education.

7.3.2.1 Mediation of Music in the Foundation Phase

The lesson plans developed by the teachers showed an understanding of simple elements of music such as meter. More complex aspects of time such as duration of note values were never explored.

The approach during the study could be described as integrated due to the other two PA disciplines being incorporated into lessons as well. Upon reflecting on the Life Skills policy document of the FP, it shows that the PA disciplines are integrated into creative games and exercises.

The technology used the most was CD's and Hi-Fi. These created innumerable sounds that were incorporated into expressive movement sentences, imagination games, mood exercises and sing-a-long songs.

Lessons featured video clips of cartoons as well. The cartoons lacked speech but was replaced with classical music. As entertaining as the cartons were, the underlying processes involved acclimatising learners to the sounds of classical music. Subconsciously the music would be imprinted in the learners mind and later when learnt in a formal setting, this could be recalled.

7.3.2.2 Mediation of Music in the Intermediate/Senior Phase

The participants in the IP/SP collaborated more with one another than in the FP. Experience had taught the grade seven teacher to collaborate with the teachers of the IP so that when learners enter the new phase, enough content had been learnt and more complex activities, such as composing, can follow. One participant however isolated herself from the rest of the rest of the group. She felt that she worked best on her own.

A wide variety of technologies were incorporated by teachers in the IP/SP phase. The participants made use of CD's MP3's, laptops, video and computers. At times lessons displayed an overuse of technology. The concept being taught became dependant on the technology and the technology did not act as an enhancer but a hindrance. The use of the computer laboratory itself proved to be challenging due to the participant going from pair to pair ensuring the correct work was being executed. More time was to acquire an understanding of a concept when learnt through a hands-on approach. However, what proved beneficial in most lessons were the reflective group discussions the class engaged in.

7.3.3 Drama

Technology was used the least and not at all in the drama classes. This was also the art form which was taught less than music and dance.

7.3.3.1 Mediation of Drama in the Foundation Phase

As previously stated, the PA in the FP follows an integrated approach. Although the participants did not explicitly teach elements of drama, through creative games they briefly touched on these elements. The only other documented activity in drama was that of the character description and visual representation of a story that was told. No other drama activities took place.

7.3.3.2 Mediation of Drama in the Intermediate Phase

The grade four teacher made a concerted effort to cover this Art form during the year. This was evident from the learners' mannerisms during the assessment. It was evident that development had taken place throughout the year. Although not formally trained in the Art form, she exposed the learners to a wealth of performances by giving the learners opportunities to describe the character traits of TV personalities throughout the year. This was the only form of technology integration.

Furthermore, drama performances were limited to the preparation of skits for the school Christmas concert. According to the coaches, the message was more important than the acting devices themselves. The integration of technology was the use of microphones, lighting and sound effects in the play(s). Although the technology greatly enhanced the performance, the skills that should have been learnt were not addressed due to a lack of time.

7.4 RECOMMENDATIONS FOR FUTURE RESEARCH

7.4.1 Focus on One Discipline

This study focused on three Performing Art disciplines. The researcher recommends that future research could focus on one discipline.

7.4.2 Focus on One Phase

It became challenging scheduling observations and interviews across three phases. The difficulty was in the timetabling of the CA lessons. Lessons were timetabled throughout the week. To accommodate teaching, the researcher did not alter any times of the scheduled lessons.

The researcher recommends that a future study should focus on one phase, rather than multiple phases. Considering the scope for integration of the PA in the FP, it becomes feasible to explore holistic development in the PA. Whereas, the PA in the IP and SP respectively, firstly focus on discrete art disciplines with limited integration across art forms, which makes it feasible to explore the implementation of one art discipline in those phases.

7.4.3 Longitudinal Study

A number of disruptions to the teaching and learning programme occurred during the course of this study. This impinged on the teaching time of the Music/Life Skills and CA programs. The researcher therefore proposes that future research should extend over a longer period of time. Research over a longer time period would yield better results as the researcher would have more contact time with the participants and more opportunities to engage in observation.

7.5   CONCLUSION

The focus of the study initially was the integration of technology into classroom pedagogy. Over time the researcher realised that it was not the technology driving the teaching but the methodology employed allowed for the incorporation of technology and adaptation of approaching fostering learning.

It became clear that teachers needed more in depth development in the art disciplines. The researcher recommends that workshops should be ongoing to develop competences in the PA. Increased competences to mediate learning and teaching in PA, could lead to more innovation in the use of technology in the classroom.

Over the duration of the study effective integration across the curriculum deepened and enhanced the learning process. In particular, it supported key components of learning: *active engagement*, *participation in groups, frequent interaction, feedback*, and *connection to real-world experiences*.

In closing, the study highlighted an area in education the will become increasingly researched and discussed in years to come. Education is moving in a direction where technology will be the minimum standard and requirement in classrooms. Provision has to be made to educate in-service teachers to accommodate the new teaching methodologies.

List of Abbreviations

APP	-	Application
BYOD	-	Bring Your Own Device
CA	-	Creative Arts
CAPS	-	Curriculum and Policy Statement
CBI	-	Computer-based Instruction
CLT	-	Cognitive Load Theory
CPU	-	Central Processing Unit
DBE	-	Department of Basic Education
DoE	-	Department of Education
DV	-	Digital Video
EL	-	Extraneous Load
ET	-	Educational Technology
FP	-	Foundation Phase
GET	-	General Education and Training
GL	-	Germane Load
IBM	-	International Business Machines Corporation
ICT	-	Information and Communication Technology
IL	-	Intrinsic Load
IP	-	Intermediate Phase
ISTE	-	International Society for Technology in Education

IWB	-	Interactive Whiteboard
JCMF	-	John D. and Catherine T. MacArthur Foundation
MKO	-	More Knowledgeable Other
ML	-	Mental Load
NCRELM	-	National Central Regional Educational Laboratory and the Metri group
NCS	-	National Curriculum Statement
NLCLEAP	-	National Leadership Council for Liberal Education and America's Promise
NRC	-	National Research Council
OECD	-	Organisation for Economic Cooperation and Development
OMR	-	Optical Mark Recognition
OS	-	Operating System
PA	-	Performing Arts
PBS	-	Public Broadcasting Service
PC	-	Personal Computer
SMT	-	School Management Team
SP	-	Senior Phase
TV	-	Television
WWW	-	World Wide Web

Appendix

APPENDIX A

Use language, symbols and texts interactively	Use media tools interactively	Understanding and using technology systems	Transferring current knowledge to learning new technologies

Use digital media and environments to communicate and work collaboratively

Digital-age Literacy

Make effective and innovative use of technology

Communicating ideas effectively to multiple audiences using a variety of media formats

Effective Communication

Twenty-first Century Literacies

High Productivity

Effective use of real-world tools to produce high quality products

Developing cultural understanding and global awareness by engaging with learners of other cultures

Using models and simulations to explore complex systems and issues

Contributing to project teams to solve problems in context

Inventive Thinking

Processing data and reporting results

Synthesising experiences coherently	Ethical reasoning and action	Creating original works as a means of personal and group expression	Using multiple processes and diverse perspectives to explore alternative solutions

(Adapted from NCRELM 2003: 5; OECD 2005: 10-15; NLCLEAP 2007: 3; ISTE 2007)

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