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# Exploring the use of iPads in the documentation of visible teaching and learning: a case study of a Grade 3 Reggio Emilia inspired classroom

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MEd Research Report

# Exploring the use of iPads in the documentation of visible teaching and learning: A case study of a Grade 3 Reggio Emilia inspired classroom.

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# Table of Contents


Declaration 4

Acknowledgements 6

**CHAPTER ONE: Introduction**

1.1 Introduction 7

1.2 Problem statement 9

1.3 Rationale and significance 9

1.4 Research questions 10

**CHAPTER TWO: Literature review**

2.1 Introduction 11

2.2 The Reggio Emilia Approach 11

2.2.1 History of Reggio Emilia 11

2.2.2 The image of the child 12

2.2.3 The 100 languages 13

2.2.4 Listening to children 13

2.3 Visible thinking, teaching and learning 13

2.3.1 Visible thinking 13

2.3.2 Visible teaching and learning 15

2.3.3 Thinking routines 15

2.4 Pedagogical Documentation 16

2.4.1 Collaboration 17

2.4.2 The impact of technology in the documentation of learning 18

2.5 Learning theories that inspired the Reggio Emilia Approach 19

2.6 The iPad and its affordances 20

2.7 The relationship between children and technology 22

2.8 The use of iPads in the classroom 23

**CHAPTER THREE: Methodology**

3.1 Introduction 25

3.2 Qualitative research 25

3.3 Ethnography 25
3.4 Data collection 25
3.4.1 Non-Participant Observation 27
3.4.2 Photographs 27
3.4.3 Interviews 27
3.5 Data analysis 28
3.6 Validity and reliability 29
3.7 Sample of participants 29
3.8 Ethical consideration 30
**CHAPTER FOUR: Presentation and analysis of data**
4.1 Introduction 31
4.2 Study site 31
4.3 Setting 32
4.4 Structure of lessons 33
4.5 Phase 1 33
4.5.1 Teacher interviews 34
4.5.2 Class 1 Narrative 36
4.5.3 Class 2 Narrative 39
4.6 Phase 2 43
4.6.1 Class 1 Narrative 43
4.6.2 Class 2 narrative 48
4.7 Themes 54
4.7.1 Introduction 54
4.7.2 Open coding 54
*4.7.2.1 Pupil engagement* 55
*4.7.2.2 Environment* 56
*4.7.2.3 Personal development* 57
*4.7.2.4 Communication* 58
*4.7.2.5 Information sharing* 58
*4.7.2.6 Accountability* 58
4.7.3 Axial coding 59

*4.7.3.1 Transparency* 60
*4.7.3.3 Extended learning* 60
*4.7.3.4 Reflective learning* 61
*4.7.3.5 Collaboration* 61

**CHAPTER FIVE: Discussion of findings**

5.1 Introduction 62
5.2 How learning is made visible prior to iPads? 62
5.3 How learning is made visible once iPads are introduced? 63
5.4 The value added by the iPads 64
5.5 Conclusion 66

**References: 68**

APPENDIX A 73
APPENDIX B 75
APPENDIX C 77
APPENDIX D 79

Consent Forms 80

# Declaration

I, Nelisiwe Phakathi, student number 295686 hereby declare that the work entitled "Exploring the use of iPads in the documentation of visible teaching and learning: A case study of a Grade 3 Reggio Emilia inspired classroom" is my original work. I have not copied from any other students' work or from any other sources except where due reference or acknowledgement is made explicitly in the text, nor has any part been written for me by another person.

Date: 14/09/2018

Signature: _____

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Dearest heavenly Father, thank you for your faithfulness. I am nothing without you, I am grateful for all that you have done for me. Thank you for your grace, my life is for your glory. Thank you for watching over me. I am forever indebted to you.

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To my colleagues and all those who helped in terms of support thank you so much.

**CHAPTER ONE: Introduction**

## 1.1 Introduction

Technology continues to impact our everyday lives. We use technology in almost everything; to ignore the influence of technology would be to deny the power it possesses. Life has changed over the years and so has technology, it has influenced the way we communicate and the way we conduct businesses. From young to old, we are all aware of the impact of technology. Children these days are deemed digital natives a term used to define children who grow up surrounded by technology (Perkins, 2001). Technology to children is not a new thing; they are exposed to it from an early age. Children are always willing to experiment with technology at their disposal. Technology shapes the manner in which young children think and reason (Taylor, 2012). He continues to claim that children's brain function differently from previous generation as children now are deemed digital natives. His argument is that technology determines how the brain functions. The more children are exposed to technology the more their manner of learning changes. Mindes (2005) argues that children are born with an ability to explore their world; they are always making sense of their surroundings.

New devices are constantly being introduced in the markets, recently tablet technologies have had arguably the upper hand globally, and specifically the Apple iPad has taken the world by storm. Henderson and Yeow (2012) state that when Apple released iPads in the United States of America in the year 2010, it sold over 300 000 iPads on the day of release, "3 million [iPads were sold] within the first 80 days after release" (Henderson and Yeow, 2012, p.78). Likewise, in South Africa, Fripp (2013) states that between June 2010 and June 2013, over 1.4 million tablets were sold. These tablets included brands like Samsung, Apple and the others. Fripp (2013) continues to say that Apple iPads were the most popular and was on 45% market share. It is clear that Apple iPads are trending. According to Groenewald's (2013) article on the City Press website, many South Africans preferred Apple iPads because of their convenience and easy to use touch screen. Groenewald (2013) states that whenever Apple is about to release a new tablet, people tend to queue up at the stores. According to Henderson and Yeow (2012) most people in the US bought iPads for personal use. At a later stage, businesses were drawn to this technology, this was to increase productivity and efficiency.

On seeing the influence of the iPad in business institutions, schools around the world were also drawn in using iPads as well. Clark and Luckin (2013) reported that in the US alone, 1.5 million iPads were sold to educational institutions mainly to enhance teaching and

learning. Some schools were government sponsored. Schools saw the need to make use of what children are already exposed to, that is the iPad. Many children do own iPads at home but could not use them for school, hence the introduction of these devices in schools. Teachers now have to find creative ways of using the devices in a much more meaningful manner rather than just to play games.

South Africa has experienced a relatively similar trend. Some schools were looking for ways of supplementing teaching and learning hence the introduction of iPads in a few schools. Many independent schools in South Africa have adopted the use of iPads in teaching and learning. Some public schools have joined in as well. The Tablets for Schools website (2013) reported that 50 primary schools in Limpopo were introduced to iPads by the Molteno Institute for Language and Literacy. The website reported that the institution plans to roll out 30 000 more tablets to 250 schools around the country. This shows the impact that technology has on education, in essence, it is widely accepted that technology will bring about changes in the classroom such as moving from traditional methods of teaching and learning to those methods that promote 21st century skills and will help prepare learners for the workplace. Some of the country's business institutions decided to donate tablets to schools as they also believe that such devices do enhance teaching and learning. One other reason is to ensure that schools prepare learners from a young age for the 21st century skills such as critical thinking, independence and problem-solving etc. that are needed in the global market. It is believed that integrating ICTs will ensure the success of this. Oppernheimer (1997) argued that ICTs do not enhance teaching and learning, instead ICTs are just expensive and purposeless. He views the integration of ICTs as a waste of money reason being that in as much as schools implement technology, they have to continuously keep up with the progression of technology which is costly. There have been studies on the negative impact of iPads in the education of young children. Many claim that iPads have no educational value on young children but they agree that iPads are good tools to engage children (Khoo, Merry, Nguyen, Bennett and MacMillan (2015). Critiques of the use of iPads for educational purposes argue that iPads are dangerous to young children as they hinder their learning and social development. Khoo et al. (2015) argue that there are many articles that emphasize the importance of integrating iPads into education, specifically young children. They argue that the recent studies show that iPads afford young children with new learning opportunities.

Having outlined the integration of ICTs, this study seeks to set up the examination of using iPads in a Reggio Emilia classroom as an example that can potentially demonstrate strength of ICT integration in schools.

## 1.2 Problem statement

The integration of Information and Communication Technologies in schools came with the idea of improving teaching and learning. It would be a challenge for educational practitioners to ignore the impact of technology as it brings about new pedagogies needed for the 21st century skills. Ndlovu and Lawrence (2012) argue that teachers need to use ICT to develop higher order thinking skill in their learners. This cannot happen in isolation, teachers need to plan and develop lessons where the integration of ICTs is effective. For this to happen teachers are to consider a "deeper learning approach like learning to be critical, reflective and learning to be creative and applying collaborative reflections" (Jahnke, 2012, p.1). It is said the ICTs "offer the potential for encouraging reflection and critique, with users engaging in discussions over a longer time frame than is possible in face-to-face discussions [i.e. emails, blogs and chats which are ongoing]" (Conole and Dyke, 2004, p118). With this being said, educational institutions want to produce learners who will be productive, reflective and critical thinkers.

Teachers are constantly seeking ways of enhancing learning as approaches to teaching are changing. Globally, teachers now use any kind of technology at their disposal to enhance teaching and learning. Technologies such as cell phones and iPads are now used in some schools with the aim of enhancing learning. Although the have been investigations on mobile technologies in education, little has been said about mobile devices in primary schools (Reid, Reid and Ostashewski, 2013). The South African policies do not say much about how such devices can be integrated in education in order to develop critical thinking skills in learners. Key to this study is the extent to which learners use iPads to document their learning to make it visible in a Reggio inspired approach classroom which takes on the notion of helping learners acquire critical thinking skills.

## 1.3 Rationale and significance

It is widely accepted that information and communication technology can be employed to enhance teaching and learning in schools, although there are arguments that contest this view there is not necessarily consensus about what this 'enhancement' actually is. It is further argued that promoting critical thinking has been at the heart of educative teaching and learning. This research seeks to make a contribution to the understanding of digital technology in these terms within a Reggio Emilia primary school classroom environment. It will investigate how digital technologies, particularly iPads, contribute in the documentation of visible teaching and learning. The scope of the research will cover how learning is made visible using iPads, and what value the introduction of iPads adds in the documentation of visible teaching and learning.

The research aims to explore if and how (i) using iPads would engage learners and give them the opportunity to document their thinking and learning so as to make it visible, (ii) using iPads would enable teachers to help learners learn visibly after school hours. This study will contribute to the available literature on the pedagogical use of iPads in a Reggio Emilia context, in particular in relation to the documentation of visible teaching and learning.

## 1.4 Research questions

- What value do iPads bring in the documentation of visible learning?
    - How learning is made visible prior to the introduction of iPads?
    - How learning is made visible once iPads are introduced?
    - Does the use of iPads make a difference?

**CHAPTER TWO: Literature review**

## 2.1 Introduction

This section sought out to review literature relating to the Reggio Emilia Approach to learning and teaching. The literature discussed the history of the Reggio Emilia approach in terms of how it came about and what it entails. Important aspects of this approach such as the image of a child, the 100 languages, listening to children, making thinking visible and the pedagogical documentation of learning will be discussed. The literature also discussed the learning theories that have influenced the Reggio approach. Finally, the current research on the use of iPads in the classroom was discussed in relation to its affordability in the documentation of visible teaching and learning as it is the basis of this study.

## 2.2 The Reggio Emilia Approach

### 2.2.1 History of Reggio Emilia

Reggio Emilia is a city in Italy, it is known for its approach in education especially in early childhood. The Reggio approach is a philosophy to teaching and learning which was founded by Loris Malaguzzi an Italian teacher who "became interested in the building of a new school directly after the World War II" (Gardner, 2008, p.xv). This approach came into being as "educators, working together with parents and citizens, have built a public system of child care and education long recognized as a center of innovation in Europe" (Edwards, Gandini and Forman, 1998, p.5). It is said to be "the most innovative, high-quality, city-run, infant-toddler and pre-primary systems in the world" (Hewett, 2001, p.95). In a way the city prides itself with the continuous opportunities it provides for children. "The Reggio Emilia philosophy is specifically 'community' oriented, regularly bringing people in from the city to interact with children" (Davies, 2014, p.14). Schooling in this approach is no longer about teachers and learners only but includes members of the community to ensure that children are provided with good education. According to Edwards et al (2008), the role of the Reggio approach is to ensure that children are provided with best practices and afforded the opportunity to be the best they can be. In essence, children are the basis of this approach; their development is vital. This approach is not only about teaching and learning. It has to do with the environment in which the child is placed in. Classrooms are set up differently from traditional settings, natural colours are always used to inspire young minds, the setting is also not limited to the classroom, and outside spaces are important as well. The environments need to be safe for children to learn. The approach is well-

known worldwide for its emphasis on the child and its innovative practices. Many early childhood development institutions have opted to adopt this approach; such schools are referred to as the Reggio-inspired schools.

### 2.2.2 The image of the child

In the Reggio approach, the development of children is vital (Hewett, 2001). Reid et al (2013) argues that this approach requires teachers to rethink their ways regarding how children develop and learn. This means that teachers need to acquaint themselves with their learners. As they do this, they will be able to recognise that children are unique and therefore will be able to cater for learners individually. Hewett (2001) outlines ways in which children are viewed in Reggio, 1. Children are viewed as capable individuals with rights. According to Malaguzzi (1994) children have a right to education and should include the right to be taught by competent teachers, the right to well-structured spaces. Children need to be given the attention they deserve. 2. Children are individuals who have the ability to research what has been presented to them. Rinaldi (2006) states that this image of a child looks at a child in a holistic manner. Attention is given to the competencies that the child has in learning. Children "are autonomously capable of making meaning from their daily life experiences through mental acts involving planning, coordination of ideas and abstraction" (Edwards et al, 1998, p.81). Children are curious beings; therefore, they should be afforded the opportunity to research information in order to gain knowledge and understanding. 3. Children as constructors of their knowledge, this means that children have the ability to create their own meaning and theories based on what is presented to them. Unlike in traditional approaches, where children are imparted with knowledge, this image of a child focuses on children as co-constructors of knowledge. It is the responsibility of the teacher to ensure that children realise their potential and abilities in knowledge construction. 4. Children are social beings meaning that they come to construct knowledge by interacting with others and their environment. In essence, children in Reggio are important beings and are nurtured to be the best they can be. Hewett (2001) writes that teachers are viewed, as 'co-learners' and 'collaborators' (2001, p.97). This means that teachers need to work hand in hand with children in constructing knowledge. Teachers cannot be ignorant of the fact that children are born with the ability to learn on their own. Children in essence, need to be taken seriously (Rinaldi, 2006).

### 2.2.3 The 100 languages

Reggio believes that children have 100 languages that they use in meaning making or in presenting their knowledge. The 100 languages "represents a strategy for the construction of concepts and the equal dignity and importance of all languages" (Rinaldi, 2006, p.175). The 100 languages is used as a metaphor, it actually refers to the different ways in which children represent their communication and thinking. Children in Reggio Emilia are not limited or restricted; teachers always respect what the children have to say and teachers insure that they afford children opportunities that will encourage them to reach their full potential.

### 2.2.4 Listening to children

With the focus being on the holistic development of a child, at the heart of Reggio Emilia is the pedagogy of listening, observing and documenting learners work. Through these, it is argued that teachers are able to reflect on their practices (Hewett, 2001). Listening "is a process of transformation where you lose absolutely the possibility of controlling the final result" (Rinaldi, 2006, p.184). Teachers in Reggio schools tend to not focus on anticipated answers but offer children the opportunity to reason on their own. The process of teaching and learning has moved from the 'right' or 'wrong' answer. Teachers do not control or prompt learners on responses as learners are given the opportunity to share their thought and that their thoughts are not ignored but taken into consideration. According to Rinaldi (2001) Reggio Emilia does not look at teaching as feeding or imparting information to learners but that learners are given the opportunity to express their thoughts and take on the subject presented. Listening to children's ideas, allowing them to converse with their teachers is important rather than expecting one straight answer from them (Dahlberg and Moss, 2001). Reggio Emilia views knowledge as a social construct. Listening means "listening to thought […] it means treating thought seriously and with respect […] treats knowledge as constructed, perspectival and provisional" (Rinaldi, 2006, p.15). This means that knowledge is created, with perspective, but also subject to change. Not only does listening focus on the actual words being said, it goes beyond that as it focuses on the thinking of the child.

## 2.3 Visible thinking, teaching and learning

### 2.3.1 Visible thinking

Visible thinking "refers to any kind of observable representation that documents and supports the development of an individual's or group's ongoing thoughts, questions,

reasons and reflections" (Tishman and Palme, 2005:1). This means that any form of writing that learners and teachers produce refers to visible thinking as it offers an individual the idea of what is being discussed. Materials like worksheets and mind maps demonstrate visible thinking. These in a way may form part of what it means to document learning. Documentation will be discussed later in the literature. Visible thinking is an initiative that was developed by Project Zero at the Harvard University. It "is a broad and flexible framework of enriching classroom learning in content areas and fostering students' intellectual development at the same time" (Perkins, Ritchhart and Tishman et al, 2009, p.5). This initiative was inspired by the Reggio approach to teaching and learning. Ritchhart and Perkins (2008) who outline the six principles of making thinking visible as:

1. *Learning is a consequence of thinking*. Students' understanding of content and even their memory for content, increases when they think through— and with— the concepts and information they are studying. Thinking through issues is not a solo endeavor, however. Team members often share and build on one another's knowledge. Notational systems, specialized vocabulary, and various technological and other tools also free up memory for more complex tasks.
2. *Good thinking is not only a matter of skills, but also a matter of dispositions*. Open-mindedness, curiosity, attention to evidence, skepticism, and imaginativeness all make for good thinking (Perkins & Ritchhart, 2004; Perkins, Tishman, Ritchhart, Donis, & Andrade, 2000). Such characteristics concern not so much a person's abilities as how the person invests those abilities. Children and adults often greatly underutilize their thinking capabilities. Accordingly, besides nurturing relevant skills, education needs to promote open-mindedness over closed-mindedness, curiosity over indifference, and so on. Several studies support this dispositional view of thinking.
3. *The development of thinking is a social endeavor*. In classrooms, as in the world, there is a constant interplay between the group and the individual. We learn from those around us and our engagement with them. The sociocultural character of classrooms and schools should ensure that thoughtful learning is pervasive, not sporadic.
4. *Fostering thinking requires making thinking visible*. Thinking happens mostly in our heads, invisible to others and even to ourselves. Effective thinkers make their thinking visible, meaning they externalize their thoughts through speaking, writing, drawing, or some other method. They can then direct and improve those thoughts. Visible Thinking also emphasizes documenting thinking for later reflection.

5. *Classroom culture sets the tone for learning and shapes what is learned*. We have identified eight forces that shape classroom culture: (1) classroom routines and structures for learning, (2) language and conversational patterns, (3) implicit and explicit expectations, (4) time allocation, (5) modeling by teachers and others, (6) the physical environment, (7) relationships and patterns of interaction, and (8) the creation of opportunities. Depending on their form, these forces can support or undermine the rhythm of thoughtful learning (Ritchhart, 2002, 2007).
6. *Schools must be cultures of thinking for teachers*. Professional learning communities—in which rich discussions of teaching, learning, and thinking become a fundamental part of teachers' experiences—provide the foundation for nurturing thinking and learning in the classroom. Administrators need to value, create, and preserve time for teachers to discuss teaching and learning, grounded in observation of student work.

According to Ritchhart (2009) the main goal of making thinking visible is to "develop students thinking dispositions and intellectual character while deepening their subject matter understanding" (2009, p.3). Visible thinking is therefore concerned with teaching learners critical thinking skills. Learning environments need to able to cater for such skills to develop in learners. These six principles of making thinking visible set a tone for ensuring success in fostering thinking skills in the classroom.

### 2.3.2 Visible teaching and learning

Ritchhart, Church and Morrison (2011) argues that instead of focusing on rote learning, teachers should embrace the idea that learning takes place through active engagements that learners participate in. Learning should be about allowing learners to be active participants in their learning and they should be afforded the opportunities to think about the topic at hand. In a way teachers are encouraged to create environments that promote thinking and to make learners thinking visible. Perkins (1992) quoted in Ritchhart et al (2011) argue that learning is a consequence of thinking. This means that by getting learners to think about learning, their learning becomes visible.

### 2.3.3 Thinking routines

Ritchhart and Perkins (2008) outlined thinking routines to use in classrooms that want to promote visible thinking, what follows is an outline of some of the thinking routines: 1. think-puzzle-explore - this routine allows learners to "share what they think about the topic, identify questions that they puzzle about, and target directions to explore" (2008,

p57). 2. Headline – "this routine uses newspaper headlines to capture the essence of an event, idea, concept, or topic" (p59). 3. See-think-wonder, - "this routine helps stimulate curiosity and set the stage for enquiry" (p59). 4. Compass points – which helps learners explore different realities of suggestions or ideas before they may take a standpoint. Ritchhart and Perkins (2008) argue that thinking routines "help learners ponder topics that might not seem to invite intricate thinking at first glance" (2008, p.57). Such routines allow learners to grasp the concepts and help them make their thinking visible. Ritchhart and Perkins (2008) state that the schools which adopted this approach to teaching and learning proved to be successful. They continue to say that the routines outlined here are not a blueprint to make thinking visible, teachers can create their own routines to make learning visible.

Both the Project Zero and Reggio Approach state the importance of making learning visible. Ritchhart et al (2011) argues that in order to make thinking visible, teachers need to be able to use effective questions, be good listeners and document practices.

## 2.4 Pedagogical Documentation

The process of pedagogical documentation is said to have evolved in the 1970s and 1980s (Edwards, Gandini and Forman, 2012 in Wien, 2013). It plays a vital role in Reggio Emilia as it is an important way of making thinking and learning visible. Documentation is described as a "process for making pedagogical (or other) work visible and subject to interpretation, dialogue, confrontation (argumentation) and understanding" (Rinaldi, 2006, p.16). In other words, documentation makes it possible for both teachers and learners to make their thinking visible. This is achieved when work is revisited and interrogated in order to gain understanding. The documentation is normally displayed on bulletin boards or around the school where everyone can see it.

This "beautifully displayed pedagogical documentation on walls and shelves serves several functions including:

- contributing to the aesthetic awareness of children and adults;
- allowing adults and children to revisit experiences
- demonstrating publicly the creativity and competence of young children;
- making public the thinking and learning processes of young children"

(Edwards, Gandini & Forman, 1993; Gandini, 1993; Katz, 1993 in Alcock, 2000, p.7). It is displayed so that parents and others can see the progress the children are making during their learning process, this in a way helps keep parents and the community involved (Wien, 2013). Documentation helps teachers understand where their learners are in terms of grasping important concepts. These writers state that once teachers have reflected, they then know where to fill in the gaps for their learners.

Davies (2014) and Wien (2013) observe that documentation is not concerned about the display of finished products but on the process itself. Documentation draws on current experiences of learners based on the topic presented, it helps learners think visibly. Documentation "visualises children's learning processes, their search for meaning and their ways of constructing knowledge" (Rinaldi, 2006, p.16). In general, pedagogical documentation is said to be an effective tool to make learning visible. Davies (2014) describes documentation as a strategy of listening to children' thoughts "through which the new is made visible and opened up for thought and extension" (2014, p.25). Documentation is not only about focusing on what is being observed but focuses on meaning making. As children are constructing their knowledge, their processes are being documented; this can be through photographs taken and videotapes.

As pointed out earlier, documentation is valuable for both teachers and learners. The view that Reggio Emilia holds for teachers is that of researchers. Seitz (2008) argues that documentation is valuable when teachers understand the reason behind their collection of visible evidence. In the processes of documenting learning, teachers get the opportunity to reflect on their practices, teachers get to learn about learning as well. According to Pellerin (2012), Rinaldi (2001) and Ritchhart et al (2011) pedagogical documentation allows teachers to reflect on their learners' thinking or work. When teachers listen to the documentations gathered, they tend to understand how children view their world and thus, children feel empowered as their work is valued by both parents and teachers.

### 2.4.1 Collaboration

"Collaboration is defined as the ability to engage in discussions about learning which are supported by technology, as well as the ability to transfer and collaborate on content" (Clarke and Svanaes, 2014, p.2). This means the working together of individuals; it can be through learners interacting with their peers or learners interacting with their teachers. In relation to the Reggio approach, collaboration includes parents and members of the

community. Gandini (2003) stresses the importance of working with others, he argues that education cannot be isolated from the child, it "should be seen in relation with the family, with other children, with the teachers, with the environment of the school, with the community and with the wider society" (Gandini, 2003). It is well known amongst the Reggio approach practitioners that collaboration plays an important role. It helps parents, teachers and the community understand children better and value them more. Reggio Emilia promotes "an educational philosophy of constructivism and a genuine and deep respect for children, their families, and their cultures, which are all, viewed as integral players in the educational process" (Hong and Trepanier-Street, 2004, p87). Reggio Emilia makes sure that parent and teachers and the community at large are involved in the development of children. Parents can come to the school to see children's progress and they can also be involved in many other things in the school to ensure that children are well taken care of at school. According to Hewett (2001) teachers in Reggio settings collaborate with their learners in the construction of knowledge. As stated earlier revisiting work covered through documents helps both teachers and learners. In this way, "the learning process is also made visible to the students, allowing them to assess their knowledge building process while interacting with others" (Pellerin, 2012, p.20). Documentation increases interactions between learners, learners and teachers. In collaborating with each other, learners get to examine their peers on the topic that is being undertaken. According to Hong and Trepanier-Street (2004) the use of technology in documenting learning helps because parents can get to see what their children have been doing at school by looking at the documented displays.

### 2.4.2 The impact of technology in the documentation of learning

Trepanier-Street, Hong and Bauer (2001) conducted a study on 'Using technology in Reggio inspired long-term projects'; they found the importance of using technology in documenting learning. They found that it was easier to share children's work with parents and that technology helped in revisiting topics covered. Trepanier-Street et al (2001) state the different types of technologies that they used in the study "e.g., computer, computer software, digital camera, video camera, and recorder, video printer, and scanner" (2001, p181). The researchers stated that they first used a Polaroid camera which is an old camera to photograph children so as to document their learning. They found it to be "time consuming and costly due to the cost of the film, the cost and time required for developing

the film" (2001, p 182). They later changed to using a digital camera and found it to be effective. Trepanier-Street et al (2001) argue that using such technology to document learning is advantageous because it is cost effective and saves time for both teachers and learners. On the other hand, videotapes provide researchers with the opportunity to replay children's work. Scanners were also used to document children's drawings and written work; this was so that the original work of children may be captured as it is. Trepanier-Street et al (2001) concluded that technology played a vital role as a tool for teachers to improve the learning experience of their learners. ICT is said to "offer the potential to develop new forms of online communities and new means of communicating and sharing information" (Conole and Dyke, 2004, p.117). Through the use of technology, children and teachers have creative means of communicating their experiences and they can easily collaborate.

## 2.5 Learning theories that inspired the Reggio Emilia Approach

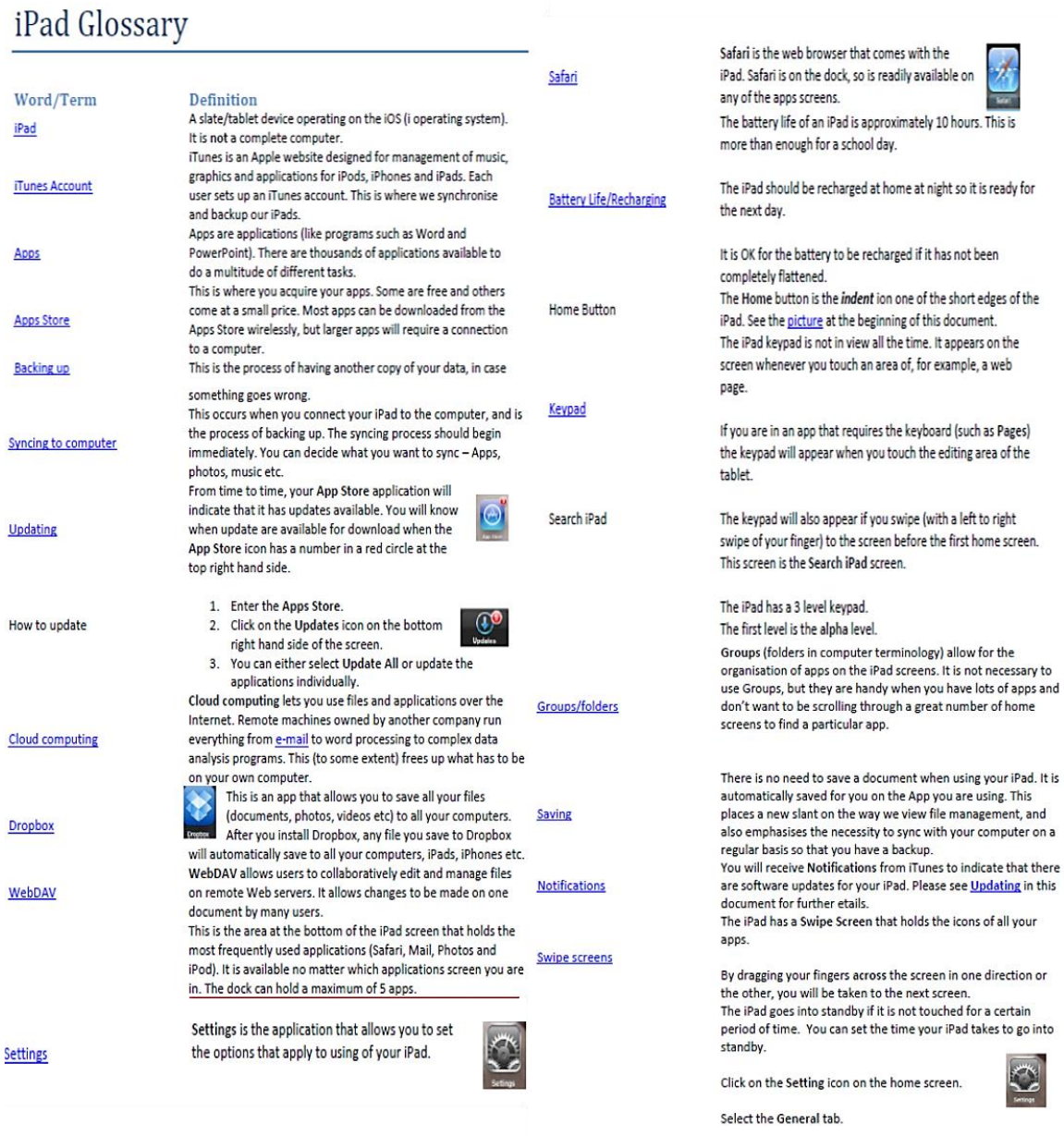
The Reggio approach "draws from the ideas and theories of many great thinkers" (Hewett, 2001, p.99) such as Piaget and Vygotsky. Piaget according to Edwards et al. (2008) influenced this approach mainly by being the one who realised the potential of children. He is said to be the first to take children seriously. He advocated for inquiry based learning where teachers create conducive environments that allow learners to be creative. Constructivism "is not based on the idea that knowledge is a substance that is transferred from teachers to students, but that knowledge is constructed by students themselves when they interact with objects in their environment" (Henderson and Yeow, 2012, p.79). This means that learners are active in the construction of knowledge when provided with conditions for learning.

On the other hand, Vygotsky influenced this approach as he believed that children learn best through social interactions. Interactions in this approach are of importance, these range from the child working with peers, with teachers and parents as well to make meaning of their world. This is of importance in Reggio, as they believe in the abilities of children when it comes to knowledge construction. The idea is that "children's learning is situated in a socio-cultural context and takes place in interrelationships, requiring the construction of an environment that allows for maximum movement, interdependence, and interaction" (Dahlberg and Moss, 2001, p.6). This means that learners are given the opportunity to make meaning in their environments; teachers create environments that

are inviting allowing learners to interact with their environments. This links with the concept of visible learning where children are afforded the chance to reflect on their work.

## 2.6 The iPad and its affordances

An iPad is a tablet computing device which was developed by Apple. It consists of a touchscreen interface which is used to control the device. It runs Apple's iOS system. It is similar to the iPod and the iPhone. Below are the features of the iPad.



iPad Glossary

| Word/Term | Definition |
|---|---|
| iPad | A slate/tablet device operating on the iOS (i operating system). It is **not** a complete computer. |
| iTunes Account | iTunes is an Apple website designed for management of music, graphics and applications for iPods, iPhones and iPads. Each user sets up an iTunes account. This is where we synchronise and backup our iPads. |
| Apps | Apps are applications (like programs such as Word and PowerPoint). There are thousands of applications available to do a multitude of different tasks. |
| Apps Store | This is where you acquire your apps. Some are free and others come at a small price. Most apps can be downloaded from the Apps Store wirelessly, but larger apps will require a connection to a computer. |
| Backing up | This is the process of having another copy of your data, in case something goes wrong. |
| Syncing to computer | This occurs when you connect your iPad to the computer, and is the process of backing up. The syncing process should begin immediately. You can decide what you want to sync – Apps, photos, music etc. |
| Updating | From time to time, your **App Store** application will indicate that it has updates available. You will know when update are available for download when the **App Store** icon has a number in a red circle at the top right hand side. |
| How to update | 1. Enter the **Apps Store**.<br>2. Click on the **Updates** icon on the bottom right hand side of the screen.<br>3. You can either select **Update All** or update the applications individually. |
| Cloud computing | **Cloud computing** lets you use files and applications over the Internet. Remote machines owned by another company run everything from e-mail to word processing to complex data analysis programs. This (to some extent) frees up what has to be on your own computer. |
| Dropbox | This is an app that allows you to save all your files (documents, photos, videos etc) to all your computers. After you install Dropbox, any file you save to Dropbox will automatically save to all your computers, iPads, iPhones etc. |
| WebDAV | **WebDAV** allows users to collaboratively edit and manage files on remote Web servers. It allows changes to be made on one document by many users. |
| | This is the area at the bottom of the iPad screen that holds the most frequently used applications (Safari, Mail, Photos and iPod). It is available no matter which applications screen you are in. The dock can hold a maximum of 5 apps. |
| Settings | **Settings** is the application that allows you to set the options that apply to using of your iPad. |
| Safari | Safari is the web browser that comes with the iPad. Safari is on the dock, so is readily available on any of the apps screens. |
| Battery Life/Recharging | The battery life of an iPad is approximately 10 hours. This is more than enough for a school day.<br>The iPad should be recharged at home at night so it is ready for the next day.<br>It is OK for the battery to be recharged if it has not been completely flattened. |
| Home Button | The **Home** button is the ***indent*** ion one of the short edges of the iPad. See the picture at the beginning of this document. |
| Keypad | The iPad keypad is not in view all the time. It appears on the screen whenever you touch an area of, for example, a web page.<br>If you are in an app that requires the keyboard (such as **Pages**) the keypad will appear when you touch the editing area of the tablet. |
| Search iPad | The keypad will also appear if you swipe (with a left to right swipe of your finger) to the screen before the first home screen. This screen is the **Search iPad** screen.<br>The iPad has a 3 level keypad.<br>The first level is the **alpha** level. |
| Groups/folders | **Groups** (folders in computer terminology) allow for the organisation of apps on the iPad screens. It is not necessary to use Groups, but they are handy when you have lots of apps and don't want to be scrolling through a great number of home screens to find a particular app. |
| Saving | There is no need to save a document when using your iPad. It is automatically saved for you on the App you are using. This places a new slant on the way we view file management, and also emphasises the necessity to sync with your computer on a regular basis so that you have a backup. |
| Notifications | You will receive **Notifications** from iTunes to indicate that there are software updates for your iPad. Please see **Updating** in this document for further etails. |
| Swipe screens | The iPad has a **Swipe Screen** that holds the icons of all your apps.<br>By dragging your fingers **across** the screen in one direction or the other, you will be taken to the next screen.<br>The iPad goes into standby if it is not touched for a certain period of time. You can set the time your iPad takes to go into standby.<br>Click on the **Setting** icon on the home screen.<br>Select the **General** tab. |

moodle.mlmclilydale.catholic.edu.au/pluginfile.../iPadGlossary.pdf?...1

According to research, the iPad device is the most effective technology ever developed thus far as it is light and easy to carry around. It has hundreds of educational Apps that can

be used by both the teacher and the learner. These Apps need to be selected effectively to ensure that meaningful learning takes place. John and Sutherland (2005) argue that thinking that new technologies would bring about change is a mistake rather we need to think about the use of such by both teachers and learners. This leads to the discussion about the notion of affordances, a term invented by Gibson who was a perceptual psychologist. The term is defined "as the perceived and actual properties that determine just how the thing could be used" (Norman, 1998, as cited in Churchill, Fox and King, 2012, p.251). It is mainly about relationships between the technology and its user (Gaver, 1991). He argues that affordance is an influential theory as it focuses on the relationship between technologies and their users (Gaver, 1991). Many researchers of the affordances of iPads have some common possibilities as outlined by Churchill, Fox and King (2012), they found that iPads can be a great resource tool, connectivity tool, collaboration tool and an administrative tool. Likewise, Drennan and Moll (2017) looked at the some of these affordances which were derived from iPad capabilities. Below is a table that shows the relationship between the iPad capabilities, iPad affordances as well as the pedagogical affordances.

| IPAD CAPABILITY | TECHNOLOGICAL AFFORDANCE | PEDAGOGICAL AFFORDANCE |
|---|---|---|
| 1 Size | Portability | Learning is ubiquitous, asynchronous, flexible |
| 2 Long battery life | No need for a power cable | Mobility of teachers and students, insides and outside of classroom |
| 3 Touch screen | Direct interface | No mouse, no external keyboard or track pad<br>Keys do not stick |
| 4 Intuitive interface | Quick and easy to learn | Tap and swipe<br>Teach with and through, not about, tech<br>Student gurus<br>Team teaching and material development |
| 5 Integrated audio and video | Make and play back audio and video recordings<br>Access to worldwide resources | Movie / audio recordings<br>Authentic learning<br>Virtual stage<br>Sophisticated presentations<br>Written / spoken comments<br>Teacher carries little home<br>Flipped classroom<br>Special needs learners<br>Digital textbooks |

| | | |
|---|---|---|
| 6 Guided access | Temporarily restrict to single app<br>Choose which app features are available<br>Disable hardware buttons | Stay on task<br>Disable task irrelevant screen areas<br>Prevent accidental gesture distractions |
| 7 Apps | Seamless integration | Document and resource sharing makes collaborative work easier<br>Learner construction of material<br>Heutagogy |
| 8 Apple TV | Share screen of one iPad to whole class | Whole class sees peers' or teacher's work whether text, audio, or visual |
| 9 Apple classroom | Monitor and manage iPads | Only teacher can see what each student is doing<br>Teacher can send or receive work through any app to or from individual students<br>Teacher corrects individuals personally and privately |

Drennan and Moll (2017)

This table shows how the capabilities of the iPad leads to technological and pedagogical affordances. The iPad itself cannot bring about these affordances it is up to both teachers and learners to explore these capabilities.

The iPad capabilities outlined above will be used to help understand how learning is made visible using iPads. Pupils' knowledge and understanding of iPads should help understand how they document learning to make it visible.

## 2.7 The relationship between children and technology

Erikson Institute (2016) state that children first encounter technology at home as they one exposed to computers and cell phone. Children use this technology to play fun or educational games or to communicate with family members who live far away. Stephen (2014) argues that the more children explore the technology the more they increase their knowledge on how to use it and this gives them an opportunity to discover more about it. Dhir, Gahwaj and Nyman (2013) outlined a number of studies relating to how learners use technology and it was found that technology had a positive impact on children such that when they were exploring technology and made mistakes, they would learn from them and were not anxious when it came to using technology.

## 2.8 The use of iPads in the classroom

"The introduction of iPad mobile devices into education opens interesting pedagogical opportunities for educators" (Reid et al, 2013). As technology progresses; it is important for teachers to take advantage of the technology. Clark and Luckin (2013) argue that technology on its own cannot enhance learning; it is dependent on how it is being used. In other words, teachers need to find innovative ways to integrate this type of technology. Critiques like Taxler (2010) quoted in The Association of ICT (2011) argue that iPads are disruptive in the classroom and that they cause chaos in way that lesson time is wasted. Others view the use of iPads as non-effective for learning purposes. Research conducted showed that teachers were more concerned about the distractions that iPads bring into the classroom as some teachers felt like the chatting or playing games on the Apps during school hours (Karsenti and Fievez 2013 in Clarke and Svanaes, 2014). Researchers who support the use of iPads in the classrooms argue that it the responsibility of teachers to make sure that learners use these tools effectively.

The research conducted by Henderson and Yeow (2012) reported that "students were generally very eager to use the device, and able to pick it up and use it intuitively with little instruction" (2012, p.87). The use of iPads in the classroom made it easy for learners to access information and to work collaboratively with others in group setting or in pair work. The research also showed that iPads were mainly used to research or to surf the internet, however, not all learners were keen during this as some found it challenging. In terms of iPad supporting collaborative learning, it was found that as iPads are portable devices they were easy to be passed on to other learners in group settings. Teachers who were interviewed in this research noted that using iPads was easy because the iPad is a small device that can easily be used. The iPad made it possible for learners to work collaboratively and independently. In the very study, Henderson and Yeow (2012) also found that iPads were not only used for educational purposes as children would use them just to play games.

Pellerin (2012) also conducted research on using iPads to document learning. Pellerin (2012) reported that iPads were effective in making learning visible. In his finding Pellerin found that documenting learning using iPads provided "the emergence of a new means of formative assessment that supports language teaching and learning for the 21st century"

(Pellerin, 2012, p.19). This means that in as much as the style of teaching has changed, it is important for teachers to explore digital documentation as means of assessing learning. Pellerin (2012) also found that iPads helped teachers to focus on their learners needs and make learning more learner-centred and therefore changing their everyday practices.

iPads have been viewed as important tools in enhancing teaching and learning, however, as research has pointed out that iPads need to be integrated meaningfully so that learners can benefit from using them.

**CHAPTER THREE: Methodology**

## 3.1 Introduction

The purpose of this study was to explore the use of iPads in the documentation of visible teaching and learning in a Reggio inspired school. This chapter discussed the methods that were employed in this study. The study was qualitative hence the chapter discussed qualitative methods of research, ethnography, grounded theory, data collection methods, data analysis and interpretation, validity and reliability, sample of participants and finally ethical considerations pertaining to this study.

## 3.2 Qualitative research

As stated above, the methodological approach to this research is qualitative. Qualitative research is described as a "systematic investigation of social phenomena and human behaviour and interaction" (Lichtman, 2013, p.4). It focuses on the "social meaning people attribute to their experiences, circumstances, and situations, as well as the meaning that people embedded into texts and other objects" (Hesse-Biber and Leavy, 2011, p.4). This type of methodology basically focuses on meanings that people make. Hess-Biber and Leavy (2011) point out that such research makes use of textual description that describes how people experience their world. This type of research allows the researcher to provide a broad and thoughtful account of the participants being studied.

The study was interpretive in the sense that it "assume[d] the social world as constantly being constructed through group interactions, and thus, social reality can be understood via the perspectives of social actors enmeshed in meaning-making activities" (Hesse-Biber and Leavy, 2011, p.5). This methodological approach was selected because it helped the researcher better understand the documentation of teaching and learning using iPads.

## 3.3 Ethnography

As outlined above, the study sought to understand the meaning that people make in their given context. The study made use of ethnographic research which "focuses on the interactive (e.g., processes, activities, and acts) and interpretive (e.g., definitions, perspectives, and meanings) aspects present within a particular setting" (Grills, 1998, p.3). This meant that the researcher was directly involved with the everyday happenings of those being studied. Ethnographic research "aims to get a holistic understanding of how individuals in different cultures and subcultures make sense of their lived reality" (Hesse-Biber and Leavy, 2011, p.193). In this manner, the study wanted to understand how the

school uses iPads to document learning to make it visible. Hess-Biber and Leavy (2011) state that ethnography simply means 'writing culture'. This study made use of classroom ethnography principles to collect data. Classroom ethnography "emphasises the socio-cultural nature of teaching and learning processes, incorporates participants' perspectives on their behaviour, and offers a holistic analysis sensitive to the level of context in which interactions and classrooms are situated" (Watson-Gegeo, 1997, p135). The focus was on what goes on in the classroom, the interactions that took place between the teacher-learners, learner-learner, learner-learning material, how the classroom space was used as well as the behaviour of the involved parties. As part of qualitative research, it was important to use what Geertz (1973) calls thick description. Thick description "accurately describes observed social actions, by way of the researcher's understanding and clear description of the context under which the social actions took place" (Ponterotto, 2006, p.543). The reason for this as pointed out by Hess-Biber and Leavy (2011) and Grills (1998) was to get inside the social world of those being studied through observing them and through recording events as they occur. Doing this helped the researcher provide a thick description to explain phenomena. Grills (1998) states that in an ethnographic study, researchers are much more interested in effectively expressing the story of individuals. In essence, researchers are storytellers. In this case, the researcher seeks to provide a vivid picture of the daily experiences of the participants of this study. Through the use of a thick description, the researcher sought to capture the lived experiences of the participants.

## 3.4 Data collection

The study took two and half months to collect data. The collection of data was divided into two phases:

Phase one began during the second term of the school calendar from July - August. This phase focused on how learning was made visible prior to the introduction of iPads. How were photographs, descriptions, and artefacts used to record thinking activities?

Phase two began during the third term of the school calendar from September - October. This phase focused on how learning was made visible once iPads were introduced. How were photographs, descriptions, etc. in recording thinking activities enabled and complemented by the use of iPads? The phase also focused on forms of documenting learning and the depth of documentation.

The study made use of four types of data collection, namely, observations, field notes photographs and interviews.

### 3.4.1 Non-Participant Observation

The researcher was a non-participant observer, this meant that the researcher did not participate in the daily activities of the participants in the study. However, the researcher was known to the participants because the researcher works at the school where the research was conducted.

Through the observations, the researcher collected field notes which were mainly focused on the interaction between the participants, the teacher and the participants in terms of how they make learning visible. These were recorded in a note book with dates and times. The observations helped the researcher to analyse the culture of the classroom as it occurred.

### 3.4.2 Photographs

According to Pink (2001) a qualitative researcher can use visuals in an ethnographic study. Photographs were used to capture how the participants interacted with each other and how they interacted with their teacher. Photographs were used also to capture the participants' work and how they made learning visible. Examples of the participants' documentation are included in the photographs on the fourth chapter of the study. Pink (2001) shows the importance of using field notes and photographs to make meaning. The researcher would walk around the class including outside spaces where pupils were working and took photographs using a smart phone. These were later collated and put into a folder specially created for the study on the computer in order to advance field notes and observations.

### 3.4.3 Interviews

Most of the interviews took place during the lessons observed on a face to face basis. While pupils were working independently, teacher participants would initiate discussions with the researcher. These were a bit short as it was during lessons, understandably so, pupils would require assistance at times. Using a semi-structured interview schedule, the interviews took place after hours ranging from 20 – 30 minutes per interview. These were recorded on the researcher's smart phone using the App called 'Voice Recorder'. Teacher participants were asked questions related to the activities taking place in class at that

particular time. Interviews conducted were much like conversations between the researcher and the teacher participants.

## 3.5 Data analysis

According to Hess-Biber and Leavy (2011) data analysis is closely related to data collection. It includes observations, asking questions about initial observations. It also includes the researcher asking more questions on what has been observed. In order to analyse data more effectively, the study employed the principles of grounded theory. This is because grounded theory "can enable ethnography its interpretative creativity which the classical ethnographic descriptive cacophony does not" (Uhan, Malnar and Kurdija, 2013, p.656). This study wanted to give a report not just a narrative that only explains the daily experiences of participants. Grounded theory is defined as a method used to systematically collect, code and analyse data (Glaser and Strauss, 1967). The "biggest advantage of GT [Grounded Theory] is that it forces researchers to continuously reflect on their work and thereby carefully select the studied material" (Uhan, Malnar and Kurdija, 2013, p.652). The study sought to analyse data in such a way that it brought new light to the studies that pertain to the use of iPads in schools particularly Reggio inspired schools.

To analyse data in this manner, the process of coding was applied to develop themes that came through when the researcher was studying data collected. Coding refers to the process that a researcher uses to organise and sort out data (Corbin and Strauss, 2008). It allows the researcher to examine data collected in order to find themes that pertain to what is being studied. This happens when the researcher asks questions based on what the data collected is saying. The researcher constantly revisits the data, analyses and compares what it says and then comes to determine the main themes. There are two main levels of coding, that is, 1. The open coding which allowed the researcher to categorise, analyse and ask questions on data collected (Corbin and Strauss, 2008). This also entailed what is referred to as memo writing which is vital in open coding because it allows the researcher to continually ask questions and to find new concepts on the data being analysed. In this level, the researcher reflects by writing notes on what is being studied.

2. The axial coding was also used to confirm the categories from the first level. For the purpose of this study, the researcher made use of both the levels discussed above. In this case, photographs, observations, interviews and field notes were used as major data

analysis method in this research. All these helped in analysing and understanding the way in which the participants positioned themselves within the visible learning environment. Having done all that, the data was interpreted in relation to the research question and the literature outlined in chapter two. The researcher believes that providing a detailed report determined the extent to which the study has managed to bring light as to whether the use of iPads in the documentation of visible learning adds value.

## 3.6 Validity and reliability

The concept of validity and reliability plays an important role when conducting an ethnographic study (Hess-Biber and Leavy, 2011). The researcher wanted to describe what had been observed. The way in which participants made meaning in the context of how they document learning using iPads to make it visible was described as it occurred. This provided a credible account of the study. Ponterotto (2006) states that thick description leads to thick interpretation and thick meaning of findings. The researcher made sure that the description written will provide a vivid picture of the daily occurrences of what had been observed. In other words, the validity of this study relied on the thickness of the description.

## 3.7 Sample of participants

The study adopted what Hess-Biber and Leavy (2011) refer to a 'purposeful sampling', this means that participants "are chosen to participate in the study based on their particular characteristics as determined by the specific goals of the research project" (Hess-Biber and Leavy, 2011, p55). The participants in this study were Grade 3 pupils from the same school and their teachers. There were 54 learners in total, 27 participants in each class and two teachers, all given letters inviting them to be part of the study of the 54 pupils, 51 pupils participated in the study. This was mainly because the school is Reggio inspired and pupils have access to the use of iPads as the school has mobile classes dedicated to the Junior Primary with one assigned to Grade 3s. Both teacher participants have completed the Making Thinking Visible online course offered by Harvard University. The study focused on these participants in order to explore the use of iPads in the documentation of visible learning.

## 3.8 Ethical consideration

For the purpose of this study, it was important to be honest about the purpose of the study to all parties that were involved in the study. Parental consent letters were sent home requesting permission from parents and guardians of participants as they are young children. Participant were informed about the purpose of the study right at the beginning. Upon receiving permission, it was vitally important to insure that the participants were assured of their protection by not having their names published and that they will remain anonymous. The researcher ensured that the participants knew that they may withdraw from participating in the study any time they wished to withdraw. Permission to photograph the participants was requested from the participants and their parents.

**CHAPTER FOUR: Presentation and analysis of data**

## 4.1 Introduction

This chapter focuses on the findings of an ethnographic study which follows two Grade 3 classes at an independent school in the northern suburbs of Johannesburg. It focuses on a series of lessons undertaken by these two classes in order to determine how learning is documented using iPads so as to make it visible. The chapter is accompanied by photographs, interview responses and pupil-teacher interactions that took place, these were to help understand each phase of the study in terms of how learning is made visible.

## 4.2 Study site

The site of this study is an independent school for girls in the northern suburbs of Johannesburg. The school has a rich history and is one of the oldest schools in the area. The school consists of three schools, which is the Pre-primary, Junior School (Grades 0-7) and the Senior School (Grades 8-12). This study focuses on the Junior School; this is mainly because it is where the Reggio Approach to learning and teaching as well as the implementation of iPads started. The school has a computer lab with 30 computers; the school started off with two mobile classes, one for Foundation Phase and the other for Senior Primary phase. The Senior Primary mobile class was shared between Grade 4 and Grade 5 classes with two classes per Grade. The Grade 6 and 7 pupils are required to bring their own iPads.

Over the year 2015, the school has since increased the number of mobile classes from two to four classes with two mobile classes for each school (Junior Primary and Senior Primary). In the junior primary, one mobile class is shared between Grade 0 to Grade 2 and the other class is dedicated to the Grade 3 classes. In the senior primary the mobile classes are allocated both Grade 4 and Grade 5, the iPads are labelled with the pupils' names as per their class register, this helps pupils not to lose their work. This is so that the tablets can be easily monitored. They are stored in a locked office situated in the Staff room in the junior school. Teachers who want to use them use a booking system monitored by the School receptionist. However, the Grade 3 iPads are kept in one of the Grade 3 classes where they are locked up in a safe. Only the teachers have access to the keys.

The integration of ICT plays a vital role in the school hence the teaching staff is involved in extensive staff developments. This is to ensure that teachers are able to effectively integrate technology in their lessons. The entire school has one IT coordinator who now has an assistant, they specialize in providing training for staff members and they also help

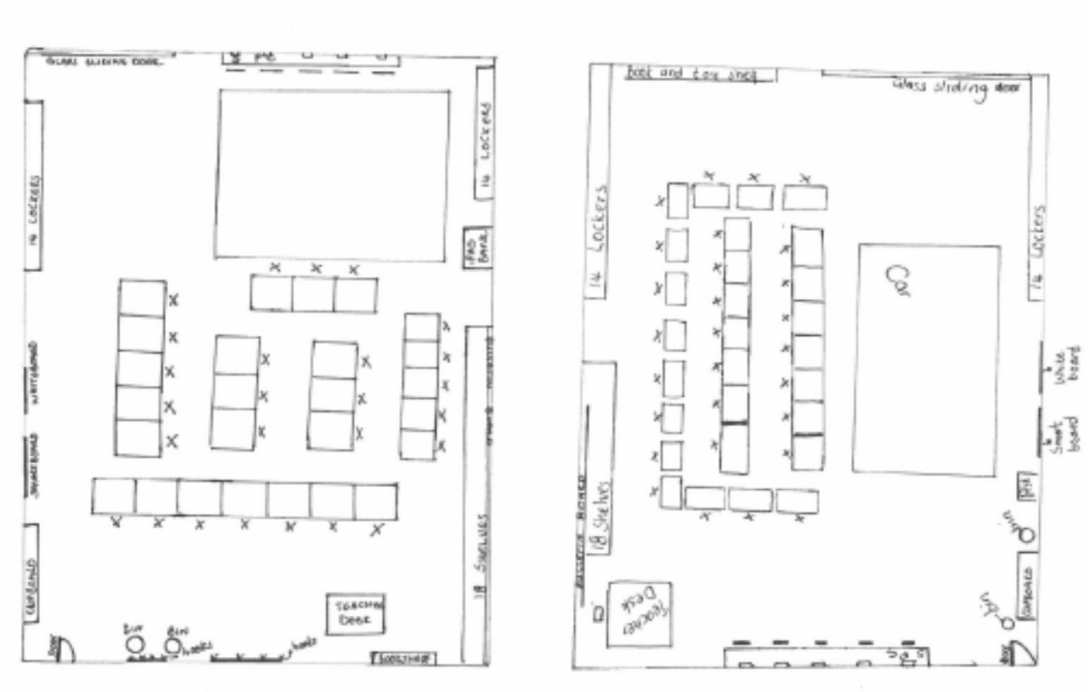
with technology integration across Subjects and Grades. The school has good Wi-Fi connection; the IT departments is known to be very effective in making sure that the school stays connected. The school has adopted the Reggio Approach to teaching and learning. The implementation of this approach started at the Pre-primary and has gradually moved to the Junior School. Teachers make use of this philosophy in their practice. The school prides itself on its high academic standards and sports.

The Staff is always involved in staff development. Teachers are encouraged to take up an online course offered by Harvard University in order to broaden their knowledge and skills when it comes to the pedagogy of making thinking visible. The course focuses on learning about "how to activate student thinking, build understanding across subject areas and determine how to help students think more critically and creatively in the classroom" (Harvard online). The course also encourages teachers to learn how to document student learning and to reflect on it as well. The course is over a 3 month period whereby the intake is always at the beginning of each term. Teachers who choose to do it would meet up after hours and sometimes over the weekend to ensure that they study. The teaching staff is encouraged to collaborate in that once the staff completes the course they are required to share their experiences with the rest of the staff.

## 4.3 Setting

The study follows two Grade 3 classes. It focuses on a series of lessons undertaken by these two classes in order to determine how learning is documented using iPads so as to make it visible. Data collection took place in two different classes as each class has its own timetable. Both classes are on the same block and are next to each other. The front of both the classes has a door and on the rear the classes are fitted with glass sliding doors leading to a playground which is covered with Astroturf, there are monkey bars that the pupils can climb during their break time. There is also a Chessboard which the girls play as well. The area is fenced and on the other side of the fence is a parking lot which is usually busy with parents and visitors.

Both classes have the same furnishing, which consist of bulletin boards, lockers, carpet area, rubbish bins, teacher desks, pupils' desks and chairs, teacher cupboards, smartboards, projectors, 5 personal computers.




Class layout of class 1 and class two respectively

## 4.4 Structure of lessons

The study focuses on Grade 3 classes and the learning that takes place in the classroom. The focus is on how learning is documented in order to make it visible. Phase One focuses on a series of unstructured lessons and how they are documented while Phase Two focuses on structured lessons which were focused on the 'Heritage' theme once iPads were introduced.

## 4.5 Phase 1

The following section provides a thick narrative of the events that took place between the two Grade 3 classes, the narrative encompasses field notes, observations, photographs as well as interview responses from teacher participants, these were conducted at the beginning of phase one and during the duration of both phases. The two classes will be referred to as Class 1 and Class 2. This narrative will capture the events as they take place in each class. The focus is on the many activities that take place in the two classes, particularly the manner in which learning is documented.

The following is the profile of the teacher participants in this study.

| Teacher Profile | | |
|---|---|---|
| | **Teacher 1** | **Teacher 2** |
| Qualifications | Diploma in Education<br>BSc Special Needs Education<br>BEd Honours<br>Making Thinking Visible Certificate | BEd degree<br>Making Thinking Visible Certificate |
| Experience | 17 Years | 3 Years |
| Subjects taught | English, Mathematics, Life Skills, Design and Technology and Divinity | English, Mathematics, Life Skills, Design and Technology and Divinity |
| Technology | iPads, computers, smart board | iPads, computers, smart board |

### 4.5.1 Teacher interviews

How often do you document learning and how do you choose what to document?

> *"I use my own discretion on what needs to be documented on the bulletin boards, like right now we are exploring 'My feelings and my identity', we use our Life Skills books as journals and we also use some thinking routines. There is a lot of stuff that the girls (pupils) write about, some too deep and personal that some pupils were scared that this will be shared. Of course I do not share such information! Honestly I do not document everything, time is just not there"* – Teacher 2

> *"We try and document everything, I want my girls (pupils) to know that when it comes to their thinking, there is nothing that is considered wrong"* – Teacher 1

How often do you use thinking routines?

> *"I try to use thinking routines in Mathematics and English and during our Friday time dedicated to the Reggio philosophy. We collaborate and move*

*from one section but we sort of still guide pupils. I think we all battle from Grade 1 to Grade 3, it is so hard to get them to think, they are so little - you know. You are not going to get the answers you are looking for - we call it Guided collaborative learning, so our steps I think they don't always go that way"* – Teacher 2

*"We use thinking routines almost every week, there is a routine in either Mathematics, English or Life Skills, sometimes we use three different routines depending on the topic that we will be doing. So we use a lot of thinking routines"* Teacher 1

What do you do with the documentation that you have?

*"I use documentation to reflect because not all pupils are able to think critically, some their language is not good but pictures reflect understanding of the topic of discussion. It confirms or addresses concerns"* Teacher 2

"*We show it to parents, we make sure that they know exactly what we do in class, and this helps us build relationship. Using iPads to document helps a lot in this regard; I can email parents immediately they can also comment on their child's work"* Teacher 1

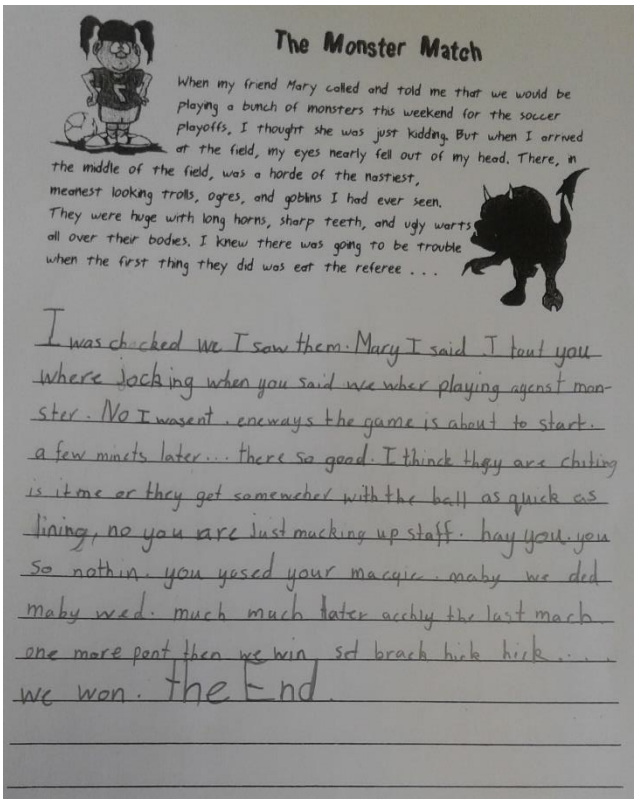
What do you use technology for in your class?

*"Pupils use it for Reading Eggs and Mathletics, these are online, and we need to be connected all the time. Our girls like Mathletics because it gives them an opportunity to play challenging Maths game with students from around the world in real time"* Teacher 1

*"Sometimes we use emails whereby our girls would send us emails about what they did over the weekend"* Teacher 2

### 4.5.2 Class 1 Narrative

This is an English lesson, prior to the documentation, pupils were given a worksheet with a paragraph that they needed to complete in order to make the story make sense.



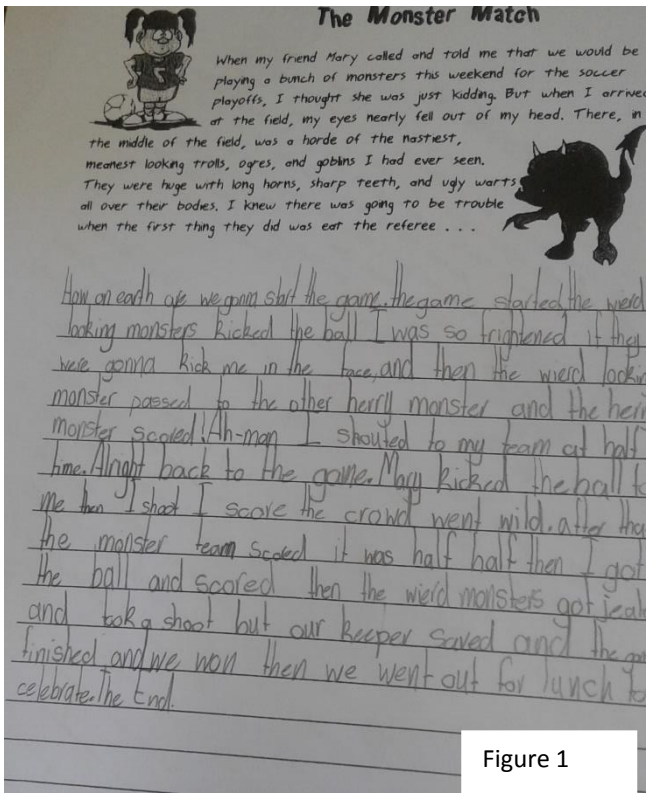



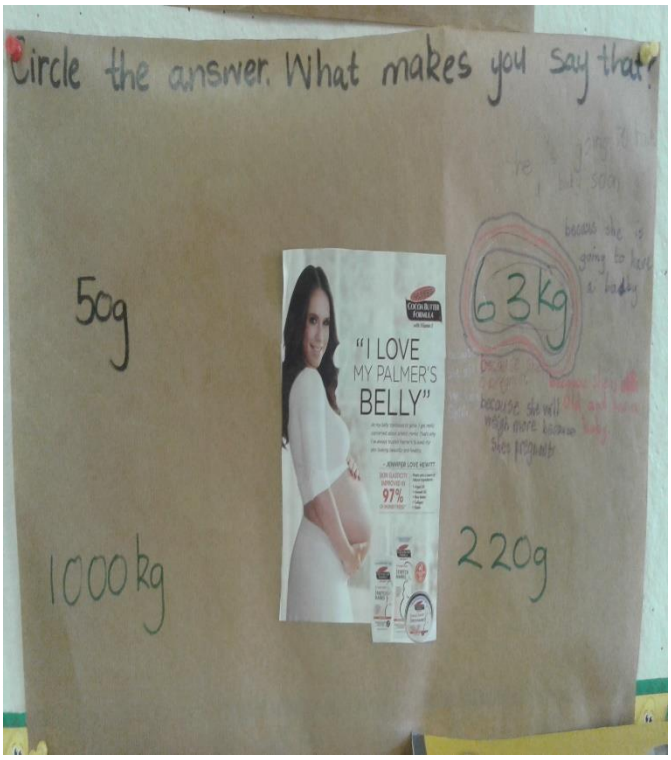

Figure 1

"The purpose of this task is to develop pupils' higher order thinking skills – to get them (pupils) in to this imaginary world and to see how creative they can be" explains Teacher 1.

Pupils read the paragraph while seated at their desks. Some pupils go to the teacher just make sure if their stories made sense and are interesting. Someone shout, "does spelling count?". One pupil exclaims, "This is hard! I can't think of anything now; I need to eat first then I can think". Another says "so are you saying you can't think because it's not break yet? Come on just try come up with something interesting for your story, I know you can, this is so cool. Come see what I have written". The teacher then encourages them not to worry about that but to write about what they think is going to happen next. Pupils showed their creativity, once the worksheets were checked, pupils are instructed to stick them into their language books.

In the next lesson, pupils were being taught on Mass in Mathematics, the teacher introduced 'What makes you say that' thinking routine. Pupils were given a picture from a magazine in which they had to guess how much the item/person weighed in real life, the pictures

were stuck on to a butcher paper with enough space for pupils to write on. They were given options to choose from and they had to justify their responses.



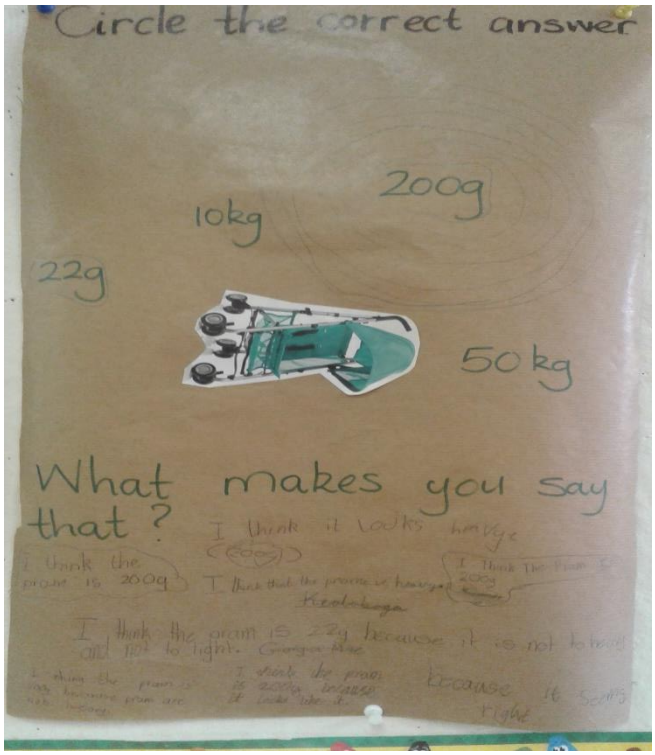







Figure 2

*"What I have noticed is that when pupils learn about Mass, they sometimes understand that 1000g equals 1 kilogram but to put it into real life perspective, there is trouble, so what I needed them to think about is that if we say the girl in the picture looks like she is 9 years old and we say she*

*weighs about 250g, now does that make sense, so you find that those pupils didn't understand the concept as far as real life in concerned, having been given choices like 250g, 32kg,900g, and 70g, some of them will chose 250g and this shows you that the concept of mass when it comes to real life experience is lost"* Teacher 1.

In this next lesson, in Art pupils are discussing how music related to colour. The teacher instructs them draw a violin and paint it in colours that express how they are feeling at the moment.

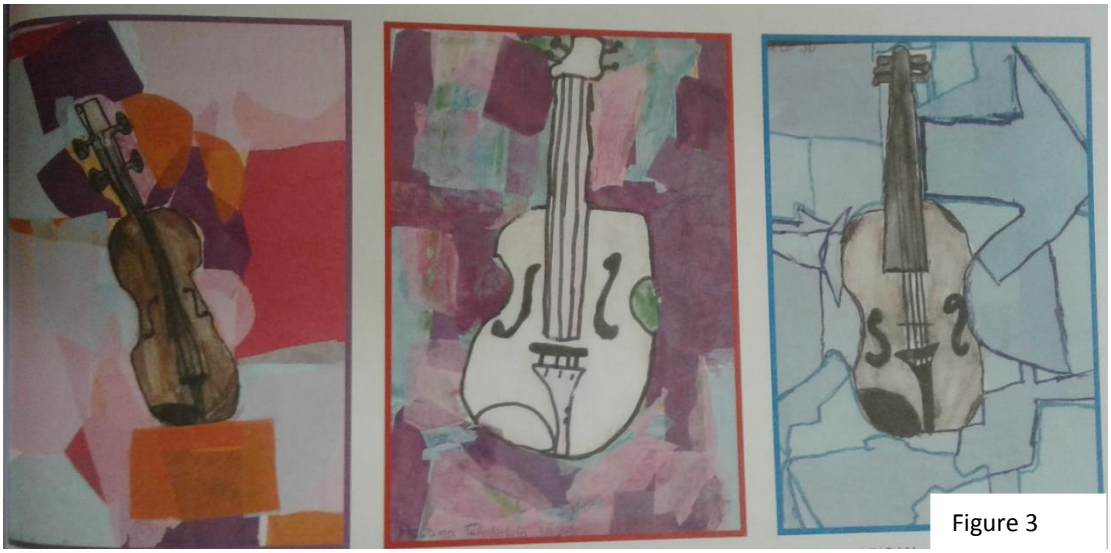


Figure 3

Pupils were so excited, they used paint and coloured paper to design collages around the violins they drew. When discussing their paintings, one pupil pointed out that a violin brings a sense of calmness to her and that is why she chose to do a purple background.

### 4.5.3 Class 2 Narrative

The girls are seated on the carpeted area of the classroom for their first lesson of the day, this is called 'Circle time'. There is a bit of noise everyone is talking about the American elections. There is just some unrest from some pupils in the class. The teacher asks pupils to be quiet.

> *"The circle time is when pupils sit on the carpet to discuss their worries – much more about their feelings and emotions. This we do every morning"* Teacher 2

On this day, the discussion is around the outcomes of the elections in America. Based on the responses from pupils, the teacher uses 'Tug of War' thinking routine to debate the outcomes.

> *"As you can see pupils came to school filled with worries considering what has recently transpired in the US, obviously they heard their parents discuss the elections at home as well as on the news"* says the teacher.

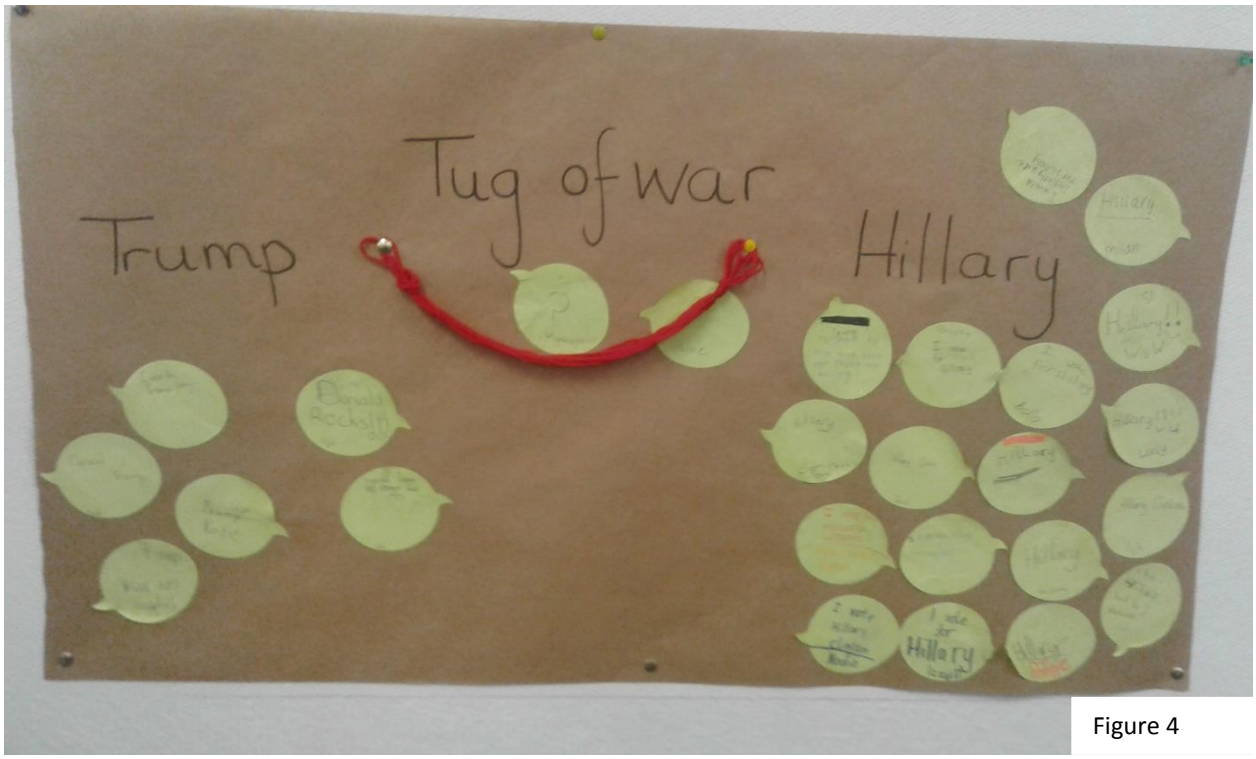



Figure 4

The class continues to debate about Hillary Clinton and Donald Trump. One pupil stands up and mentions that her uncle and aunt are worried about what will happen in the US and that they want to come back to South Africa. While most pupils are in support of Hillary Clinton some are in support of Donald Trump. One other pupil raises her hand and says she believes that Trump can change because everybody can change is they want to. Another

one says Hillary cannot be trusted as she was married to Bill Clinton, who knows how he might influence her.

In the next lesson during the 'Circle time', the class discusses how technology has evolved. There are mixed feelings in terms of the role that technology plays in society. The documentation below describes pupils' feelings about technology.




Figure 5

One pupil mentions how sad she feels when her mom is on the computer, stating that she stays on it for too long. A lot of pupils agree with her, with some saying that their sisters don't talk to them at home.

Pupils are given 'Post It' notes and the teacher instructs them to quietly write down their feelings on it and stick it on to the bulletin board when done. The class is quiet during this writing process. Pupils' get up from their seats and go to the board where their teacher is, she receives the notes and pins them up the board. Some pupils start talking about what they wrote. The teacher then instructs pupils to come to the board and read up what others have written. Pupils gather around and read, they look at each other, nod and giggle.

The teacher asks the pupils about their thoughts on what they have read. One pupil comments on another's note which reads "*I like my iPad and TV exept I feel it ruind the world cause not everyone communicates*".

The pupil continues to say "*I know what you mean, everywhere is like people cannot live without their phones, they are always talking. At home there is a rule that we are not allowed phones during family time".*

Some pupils express the same view around cellphones. The teacher asks what can be done to help people communicate more and keep their phones away.

One pupil responds and says *"people should have timetables of when to use phones"* another says "P*eople must be kind"* when asked how so, she says "*They should check that if there are other people around them then be kind and switch off their phones"*

One other pupil whose note reads *"Happy-because I can play on my iPad, stay involved and research cool stuff"*

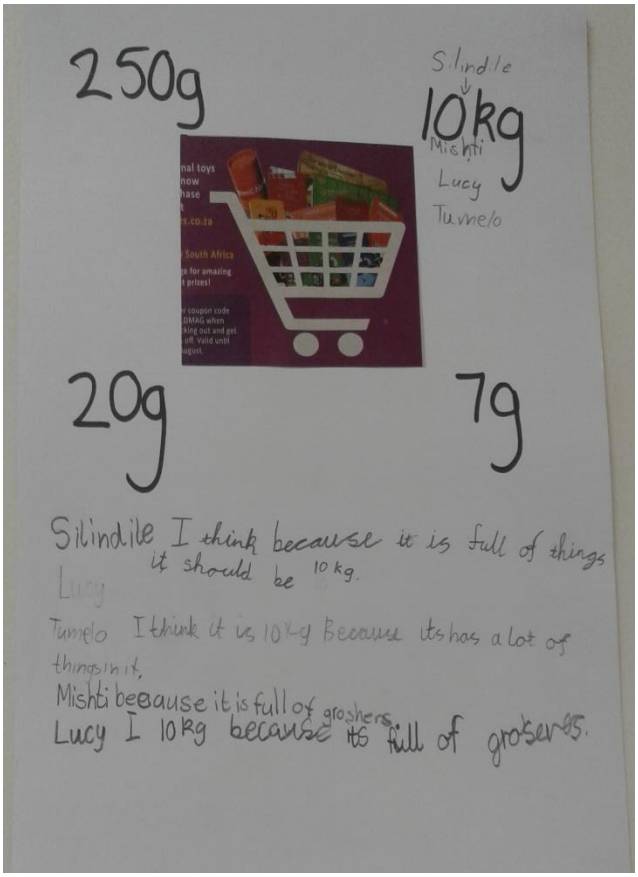
All pupils talk about how cool the iPads is. The lesson ends with pupils still talking about their feelings around the topic of technology.

In this lesson, pupils were introduced to the concept of Mass in Mathematics in Class 1. 'What makes you say that' thinking routine was used so as to form an understanding of how pupils are thinking.

> *"Because of their perception of how much something actually weighs and you can pick up from there whether really they do understand how much a kilogram is and how much 500g is"* Teacher 2

A picture of a trolley filled with groceries is put up on to the cupboard doors by the classroom's main door and pupils are to guess how much the trolley weighs using the options that the teacher put around the picture.

Pupils are encouraged to write what they think and justify they responses. One of the pupils has her hand on her chin not too sure what to make of the picture, takes a pencil and looks at the first picture then moves to the second picture of a boy holding fish on his hands and starts writing her thinking on the construction paper where the picture is stuck.



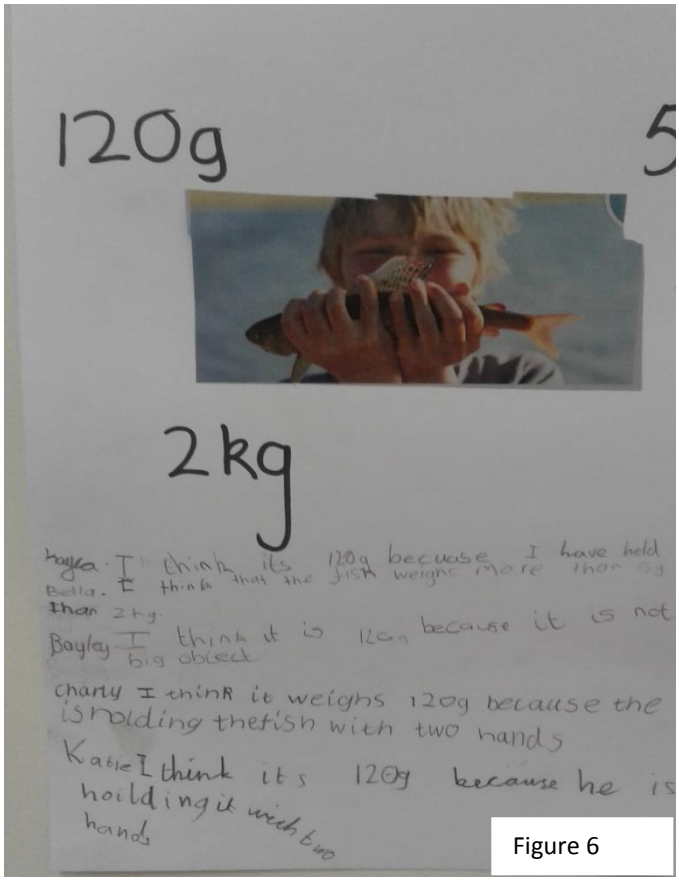




Figure 6

*"Some say its 200g rather than a kilogram then you sort of judge by that, how are they thinking and then you go back to the drawing board - to find other means of helping pupils grasp the concept at hand"* Teacher 1

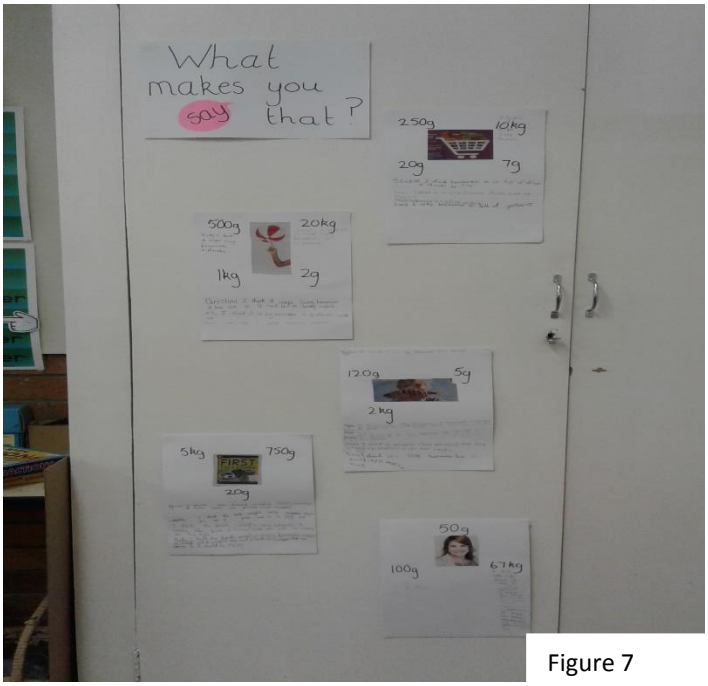



Figure 7

## 4.6 Phase 2

This next phase focuses on how learning is documented using iPads. Lessons in this phase were much more structured as they are about the 'Heritage' theme. The very process used in phase 1 will be used to narrate the daily occurrences of the two classes.

Data was collected every Friday for both classes. The Junior Primary head and the teachers have blocked the timetable for 2 and half hours in order to focus more on the Reggio aspect of the curriculum.

Prior to the collection of data, pupils were discussing the Olympic Games which were inspired by the upcoming Rio 2016 at the time. Both classes were exposed to the same topic, they encouraged creative thinking amongst pupils. The discussions led to the theme 'My Heritage', which was also linked to the approaching public holiday known as Heritage Day.

> *"The theme My Heritage came after the classes had a discussion about the Olympic Games, the discussion question directed to the pupils was 'What would you do if someone in your family brought a medal?' – Interesting responses came from pupils, these led to pupils discussing items of value in their families".* - Teacher 1

### 4.6.1 Class 1 Narrative

The class is airy quiet, pupils are seated on the carpeted area and are then joined by their teacher. Everyone from the teacher to the pupils is dressed in their beautiful and colorful traditional attires. The teacher uses the Connect – Extend – Challenge thinking routine and asks people to link what they have been learning with what they are wearing. The teacher explains to pupils that they will each get an opportunity to share about their heritage and encouraged the class to ask questions so that they can learn from each other.

One of the pupils dressed in jeans and a Protea's jersey is eager to share. Pupil A: "*I am dressed in a Protea's jersey but I am originally from Israel. I was born here though; I am wearing this jersey because it represents South Africa with its colors and symbol*"

Every one claps for her as she sits down.

Pupil B stands up and shares about her traditional wear, "*I am dressed as a Shangaan girl from Limpopo, I do not know the language very well but I try, I can speak Xhosa and Zulu though*". She then talks about the colors of her skirt known as a 'shibhelane', "*I know Tsonga people love bright colours, our tradition is very colourful, as you can see"* pointing what she is wearing and starts to demonstrate the Shangaan dance.

Another pupil originally from the Congo shares her experience and the food they like eating. Many share about their traditional clothes and their cultural rituals. The teacher wraps up the lesson by thanking pupils on an informative and valuable lesson learned.






Figure 8

In the next lesson, the teacher revisits the discussion about traditional attires, she then uses the 'Connect-Extend-Challenge' thinking routine to probe learners to come up with new traditional garments which are inspired by the diverse cultures that they come from. Upon hearing this, there is noise in the classroom with pupils already excited to undertake the project. Pupils are seated in groups on the carpeted area of the classroom. The teacher tells pupils that they will be creating an eBook that best explains the most important aspect of their culture, she then instructs pupils to plan their work in their Life Skills books. Firstly, pupils are encouraged to start working on the design of their cover page for their eBooks.

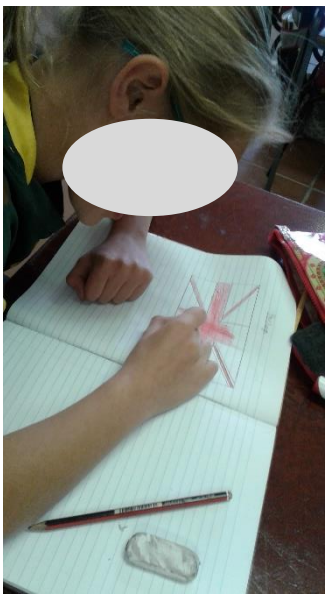
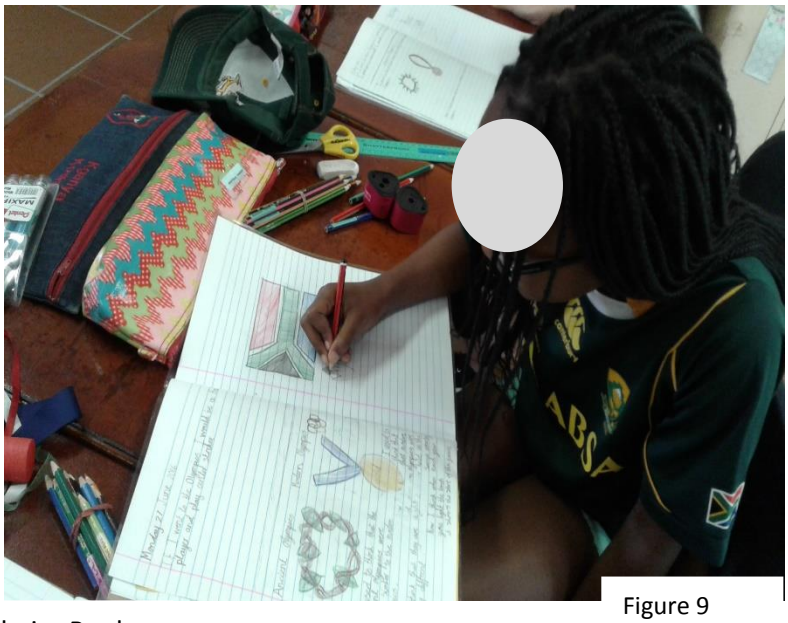




Figure 9

Pupils working on the designs of their eBooks

The work above shows how pupils took the initiative to include their country's national flag so as to incorporate it and show their diverse cultures. Pupils are so excited to come with something new and fresh ideas about their cultures.



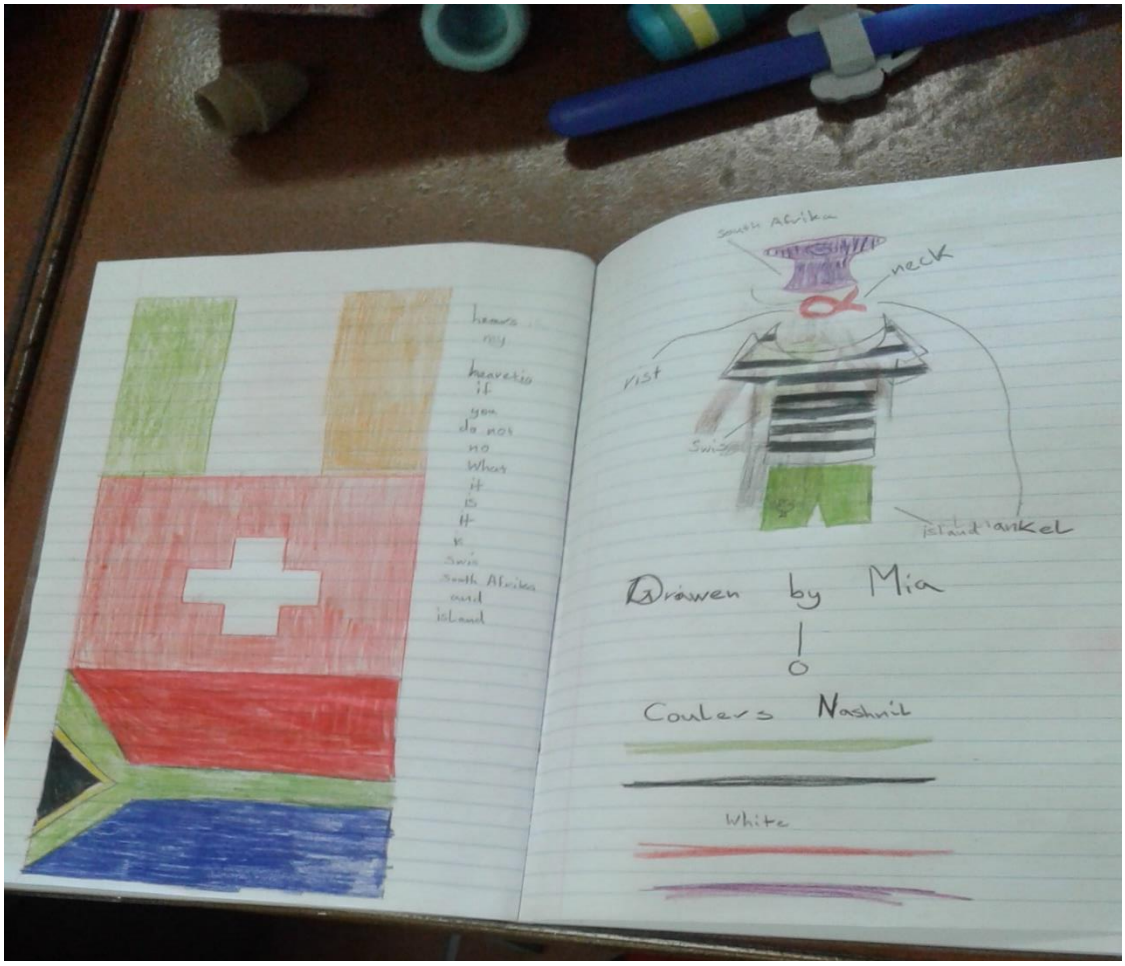


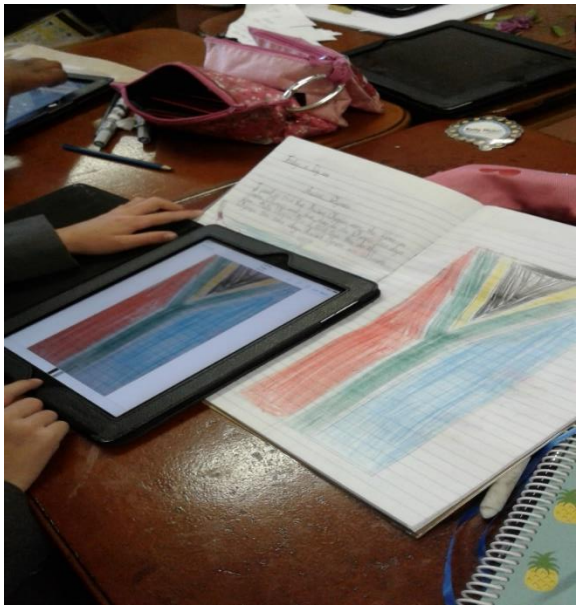

Figure 10

Some pupils leave the class and go outside to work.

> *"One thing about using iPads, you don't restrict a child to a desk. So I allowed the girls (pupils) to be as free as possible because with the iPad they can take it anywhere, they can go and record themselves in a quieter space"* – Teacher 1

In the next lesson, pupils had completed planning for their eBooks. Pupils are seated on the carpet as they wait for their teacher to give them iPads so as to start their books. The teacher instructs pupils to get an iPad with their names and directs them to the Book Creator App. This is the App that they used for their project.





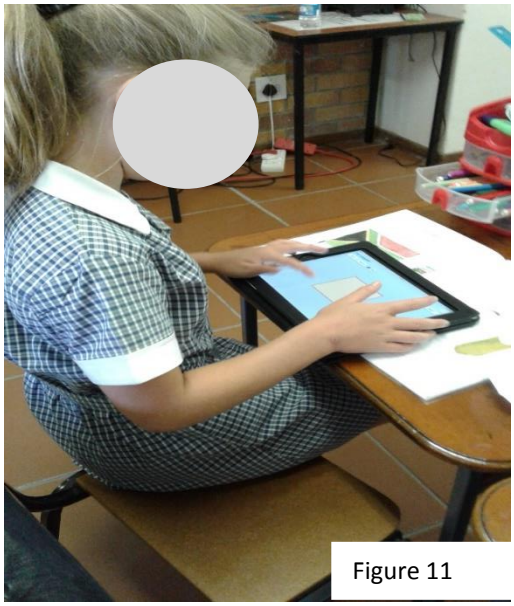
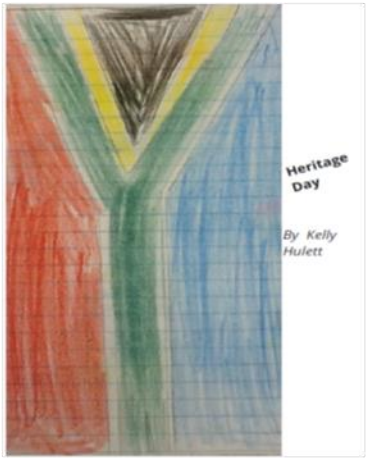
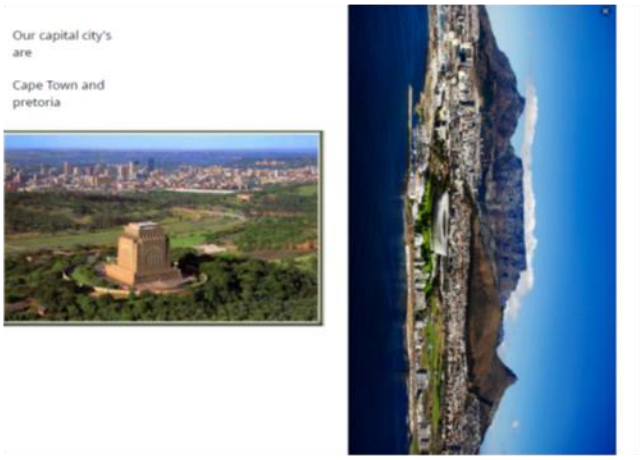


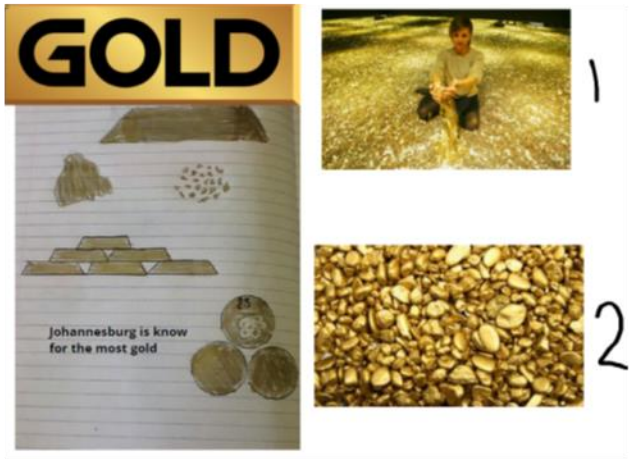
Figure 11









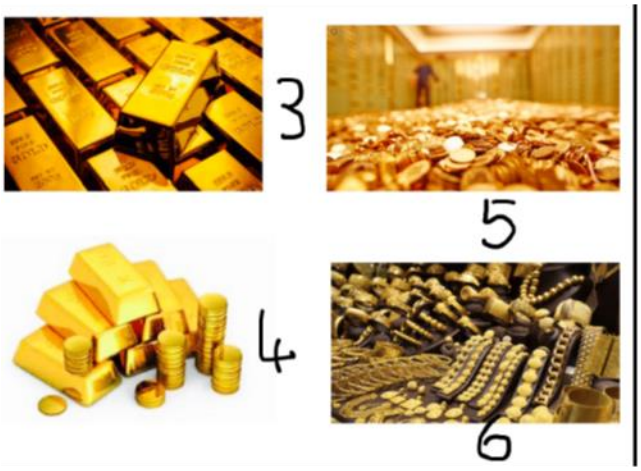







Figure 12

Above is an example of one pupil's eBook. She based her book on the City of Johannesburg known as the city of Gold. The book shows how the pupil used the colours of the national flag to design her own clothing.

### 4.6.2 Class 2 narrative

The class sits quietly on the carpet for their 'Circle time', the discussion is around the theme 'My Heritage', the teacher uses the Connect-Extend-Challenge thinking routine to start of the lesson.

"*We have been looking at where we come from as a class and in the last lesson we discussed our traditional wear and our food. For today, what I would like for you to do is to locate yourself on the world map, look at where you come from using the map*" says the teacher.

Pupils are given strips of paper and are instructed to write down their names on the strip if paper. They are also instructed to go onto the 'World map poster' pinned on the bulletin board situated just under the whiteboard. Pupils gather around the map and one pupil asks the teacher is she could get two strips to represent both her cultures and the teacher gives her the second strip.




Figure 12

Pupils look at the map after the strips of paper have been stuck on the world map. In amazement, they then compare all the strips with their current location which is South Africa. The discussion now moves to pupils discussing how far they have to go to visit family members outside South Africa.

Some pupils share about their flight trips that it takes them 20 hours some 17 hour to reach their destination and some share that they even have to take two flights to get overseas.

In this lesson, pupils are paired up and are instructed to share more with their partners about their heritage. They are reminded to take turns and to listen very carefully. The teacher asks pupils to sum up what they have learned about themselves and their cultures.

*"My parents taught me new things about my culture that I did not know"* says one pupil.

*"I still need to research more about my great grandparents but I know I am originally from Holland"* says another one.

The teacher asks pupils to think about their heritage being featured in a newspaper, and asks what would be the headline, she uses the Headlines thinking routine which pupils are familiar with. She instructs pupils to write a headline about their partner's heritage

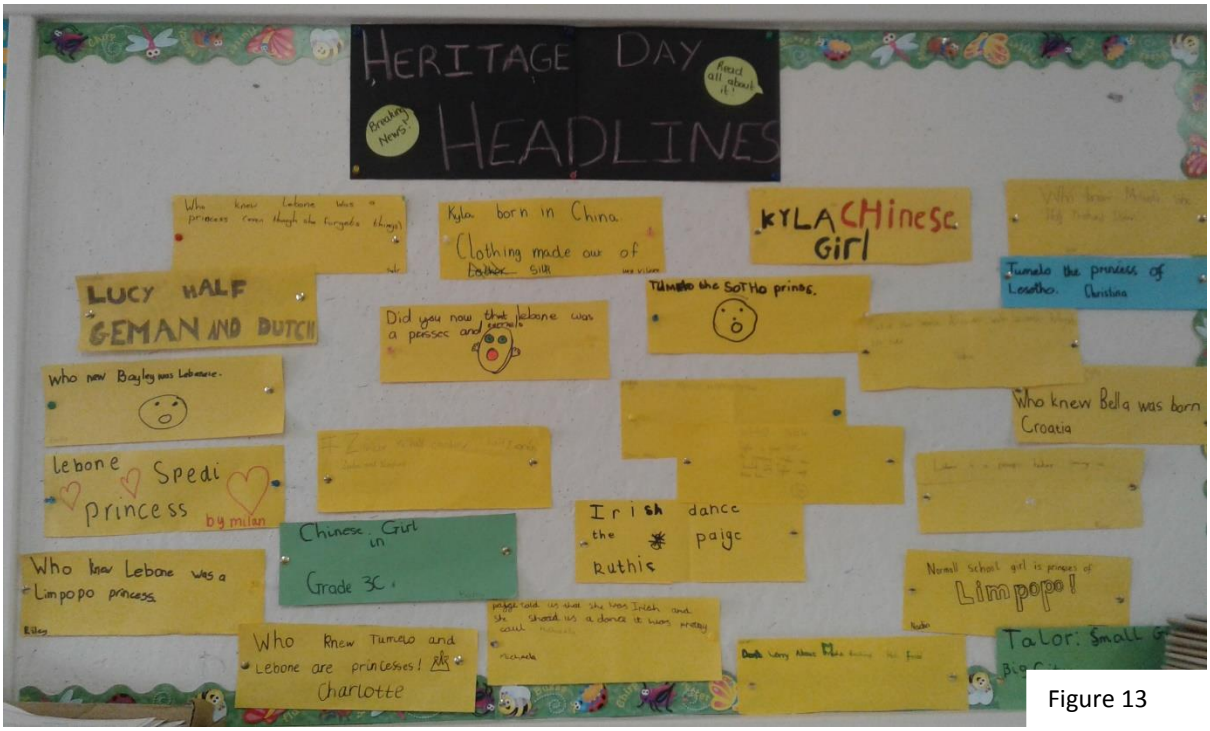



Figure 13

In this lesson, pupils are working on their designs for their eBooks. The teacher encourages pupils to brainstorm ideas first and then plan. Some pupils go work outside the classroom while other remain inside. The teacher uses the time to facilitate pupils both inside and outside the classroom.

> *"I gave them (pupils) freedom to use any space that they wanted to work at… just I feel that when they are comfortable in their own space we get better results rather than always telling them where to go… uhmm and I wanted them to feel that they had the freedom to explore. I think that that came through"*

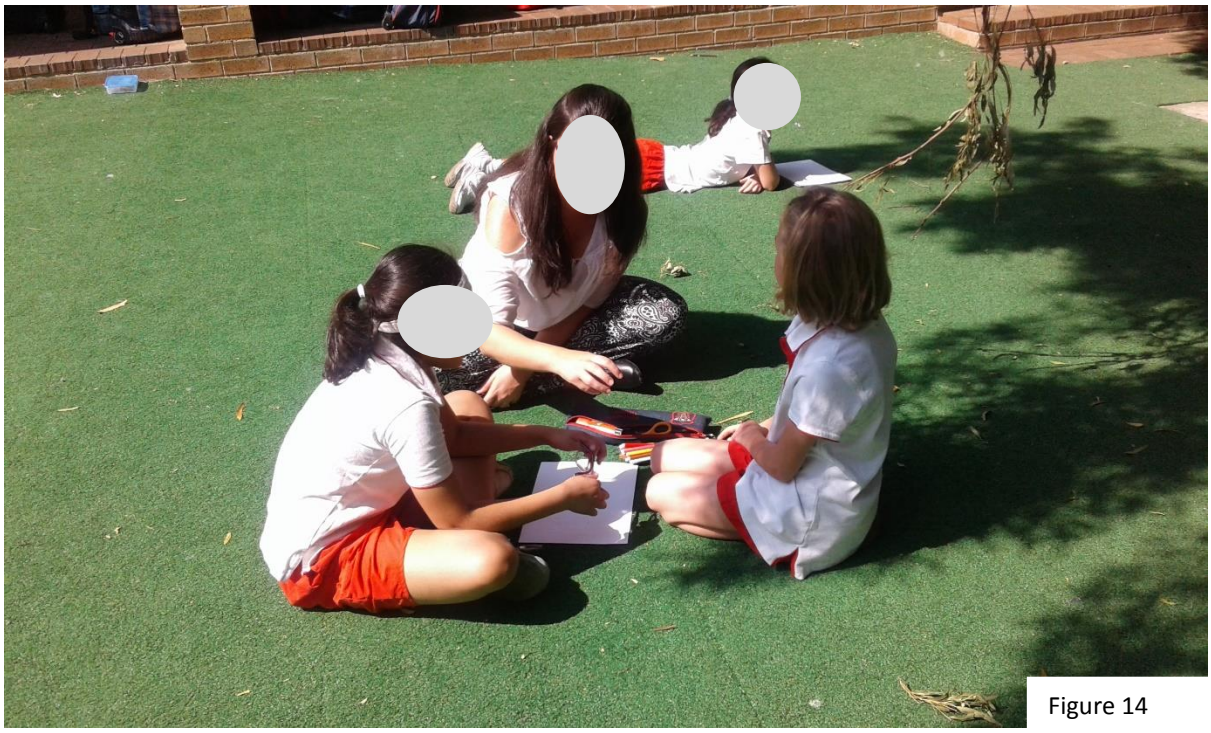


Figure 14

The teacher sits with two pupils who chose to work outside. She asks them what they are planning.

*"We are not sure yet, we are thinking of a new culture because South Africa is complicated"* said one pupil.

*"Yes, we are thinking rainbow nation"* says the other.

The teacher encourages them to think carefully about what they are planning. They both thank the teacher for her input. Some of the pupils ask their teacher if they can use iPads to brainstorm instead of using their Life Skills book. The teacher allows them to use iPads.



Figure 15

The pupil below is observed going back to the world map to look carefully at the national flag of her native country. She then draws the map on her paper.




Figure 16

The next lesson, pupils are ready to start with their books on the iPads. They collect iPads and go onto find their preferred working space. The pupil is observed with her book opened and using the Popplet App to plan her work.

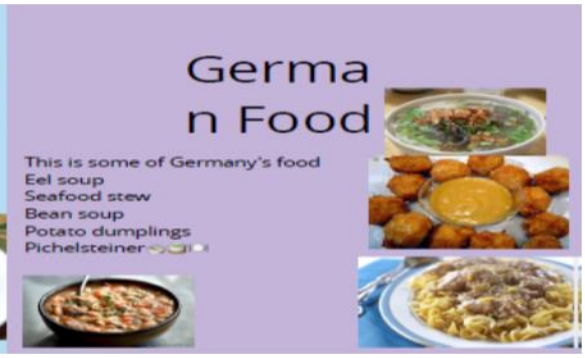


Figure 17

On the following page is an eBook created by three pupils who thought of incorporating their three different cultures into one culture that defined the group. The pupils used the national flag as a base for their new flag which is represented by the flags of the country of origin. The cover page of the eBook shows their final product in terms of their envisioned national flag that best represent their culture. Instead of each pupil designing their own eBook, the three pupils decided to collaborate so as to better give a description of what their heritage is like.


Cool
Cultures
Authors Charlotte Kyla and Lucy


Chinese
Food
Some of China's is food is
Dumplings
Springrolls
And Peking roasted duck


Germa
n Food
This is some of Germany's food
Eel soup
Seafood stew
Bean soup
Potato dumplings
Pichelsteiner


Dutch
Food
This is some of Dutch food
Oliebollen
Pannnenkoeken
Stroopwafel


Australia
n Food
This is some of
Australian's food
Burgers
Pavlova
Sausage rolls


Our flags


I hope you
enjoyed our
book

Figure 18

## 4.7 Themes

### 4.7.1 Introduction

This section of the chapter focuses on the main themes drawn from the above narrative. The study aimed at understanding how pupils and teachers in a Reggio inspired school use iPads to document their learning in order to make it visible. Having provided a thick narrative through the use of interview transcripts, observation notes and photographs; the researcher then analysed these further to find themes that were worthwhile in relation to the research question. Some aspects of the affordances of iPads as outlined by Drennan and Moll (2017) were used to enhance the themes to further analyse the coded data.

### 4.7.2 Open coding

The researcher read the data systematically in order to generate codes. Phrases and words that meant the same were systematically used by having them highlighted and written down in order for them to be coded. The table of affordances by Drennan and Moll (2017) also played an important role in the identification of some of the themes. The main themes that came up as open codes are Pupil engagement, Personal development, Communication and Information sharing. The following is a table of open codes derived from teacher interviews and classroom observations. These are further discussed below.

| ***Open codes*** | ***Data source*** | ***Evidence*** |
|---|---|---|
| *Pupil engagement* | Photographs<br>Observations | Pupils were fully engaged in lessons |
| *Environment* | Observations<br>Photographs<br>Interviews | Teachers encouraged pupils to work anywhere around the school |
| *Personal development* | Observations | Change of attitude was observed |
| *Communication* | Interviews transcripts<br>Observations | Teachers kept parents updated about work done in class |
| *Information sharing* | Interviews transcripts | Technology made it easy to share children's work |

| | | |
|---|---|---|
| *Accountability* | Interview transcripts | Teachers responsible for what is to be documented<br>Pupils responsible for doing their tasks |

#### *4.7.2.1 Pupil engagement*

From the observations of both the phases of this study, pupils showed a great deal of interest in what they were learning about, they were fully immersed in all activities. Pupils enjoyed the 'dress up' day as part of Heritage day celebration and they enjoyed talking about traditional attires they wore, as captured below.



Part of figure 8

They had their photographs taken on the day and put on to the school App for parents to see. Pupils would ask their teachers questions and also asking their peers questions that were thoughtful. The lessons were relevant to everyday life and they responded with enthusiasm. Active participation was observed to be greater in the second phase, teachers ensured that the project was designed in such a way that it allowed all pupils to fully participate. Pupils were observed sharing their knowledge on the use of iPads with their peers.



Once iPads were introduced, pupils brainstormed what needed to be done, it was clear from observations that pupils enjoyed themselves. They would go to their teachers for suggestions and for approval. Pupils enjoyed designing their eBook project, some discussed how to they wanted to create new traditional attires in order to mix up the different cultures; this was most exciting for them. They made use of the search engine on the iPad to research more about their cultures. Pupils were always looking forward to working on the iPads. The affordances of iPads such as touch screen and intuitive interface (Drennan and Moll, 2017) made it easy for pupils to take part in lessons. They were observed leaving the class room to go work outside, the portability of the iPad also allowed pupils to choose their workspace.

#### *4.7.2.2 Environment*

It was observed that classroom setup was conducive to learning in a sense that pupils felt safe to engage in lesson freely. Pupils were encouraged to work with and respect each other at all times. The environment played a huge role as it allowed pupils to do their best. Pupils would comfortably share personal stories without fear of being judged or looked down on. Teachers would encourage pupils participate in discussions, pupils wanted others to know about their family traditions and to learn from them.

In phase two of the study, the portability of the iPad and the cordless feature made moving around the school easy for pupils. Some pupils were observed choosing to work outside the class room, some opted to move from their desks while others remained in their seats.

As in the narrative, one teacher respondent explained "I gave them (pupils) freedom to use any space that they wanted to work at… just I feel that when they are comfortable in their own space we get better results rather than always telling them where to go… uhmm and I wanted them to feel that they had the freedom to explore. I think that that came through." The iPads allowed pupils to explore their environment, work freely and creatively.

#### *4.7.2.3 Personal development*

Teachers encouraged pupils to be creative, to use their imagination and to critically think about the tasks they were working on. Their documentation was well received as teachers acknowledged and appreciated the work done. Pupils took responsibility for their own tasks and this led to them grow in confidence and independence. Through the use of thinking routines and having pupils use their imagination and present their thinking was of great importance as it led to pupils feeling special and valued. They took pride in their work. Teacher respondents stated that the lessons they designed were to make sure that pupils would reach their full potential.

As discussed in chapter two, one of the ways in which technological affordances of iPads may lead to new pedagogies is student creativity (Drennan and Moll, 2017). In this case, pupils were encouraged to use their imagination in the design and creation of their eBooks, one pupil was observed taking a picture of her hand drawn work in her book and used it in her eBook. Pupils appeared to be taking pride in their tasks and this led to their confidence growing.

The technological affordances of iPads helped even quiet pupils, they were observed engaged in learning, enjoying working on the iPad, its multi-functionality allowed them to express themselves, some were observed doing audio recordings of themselves in order to explain their eBook. Pupils took pride in their work and they were eager to share their

eBooks with peers, teachers and parents. Pupils were observed complimenting one another on their eBooks. This lead to them expressing a sense of accomplishment.

#### *4.7.2.4 Communication*

Teachers would encourage dialogues with pupils in a manner that pupils found it easy to talk to them. As pupils worked together, it was observed that even the shy and quiet ones would open up and share their experiences. Pupils' documentation helped facilitate learning and helped pupils to express themselves even more when they explained their thoughts.

Communication channels at the school as a community are always open. Teacher responses to the interview questions revealed that parents were grateful for the constant communication they received from the school App and emails. Some parents would go to the classes to look at what the pupils have been learning. They would also get an opportunity to talk to teachers regarding the progress of their children using documentation displayed in the classes. Documentation helped increase communication in the school community.

#### *4.7.2.5 Information sharing*

Documentation played an important role in relation to the planning of lessons for teachers. Both teacher participants would meet in order to discuss what needed to be done next, this was based on past class discussions and documentations. They would share their classroom experiences with each other and plan for future tasks; this was mainly based on what they had observed in their classes in terms of pupils' interest. They would also share with their colleagues in the phase by presenting their documentation during staff meetings. Documentation was shared with parents as well. The iPad's Dropbox enabled pupils and teachers to easily share work with each other. Pupils were observed taking pictures and sharing them with their group members as part of their eBook information.

#### *4.7.2.6 Accountability*

Throughout the phases of the study both teachers and pupils showed accountability; pupils assumed responsibility for their learning, they were fully engaged during lessons and they took charge of the many activities they were engaged in.

Teacher respondents stated that they were accountable for all that was to be documented. In choosing what to be documented, teachers had to ensure that the documentation should boost pupils' confidence at all times and that the documentation was in line with school ethos. They used documentation to address pupils' needs. In a way, they reflected on the documentation and had to make adjustments in their lesson planning to ensure that they addressed what they found to be challenging for pupils, this was done to help them understand the concepts taught in class. They indicated that they were responsible for ensuring that pupils were protected.

Teacher participants were expected to creating relevant learning experiences. They used documentation to address the needs of their pupils. The use of thinking routines helped teachers plan their lessons meaningfully. The process of learning seemed to be deemed as important and determined what was to be documented. Teachers were observed moving from one group to another, facilitating and guiding pupils on the project.

### 4.7.3 Axial coding

Upon having developed first order codes, the researcher reread raw data once more and went through the codes, from these, themes were developed in order to provide a full analysis of the study. Below is a table that illustrates how the themes were developed. Each theme will be explored.

| *Open codes* | *Axial codes* | *Evidence* |
|---|---|---|
| *Accountability* | Transparency | Parents know what goes on in the classroom |
| | Extended learning | Future lessons derived from previous class discussions |
| | Reflective learning | Used documentation on bulletin boards to reflect |

| | | |
|---|---|---|
| | | Documentation helped teachers understand how pupils processed information |
| *Pupil engagement* | Collaboration | Teachers would share classroom experiences and planned lessons together<br>Pupils worked with each other and with their teachers |

Having gone through the themes identified as open codes, the researcher then re-read the themes to find relationships and to ensure that important aspects of the study were covered. This led to the identification of the sub-themes above.

#### *4.7.3.1 Transparency*

From the responses of teacher participants, it is clear that being transparent about classroom activities is of vital importance. Both teacher respondents expressed how this was effective and that through the process of documentation, transparency is made easy and the sharing of work with colleagues and parents and the school at large. Parents would come and look at what the classes have been learning about.

"*We show it to parents, we make sure that they know exactly what we do in class, and this helps us build relationships. Using iPads to document helps a lot in this regard; I can email parents immediately they can also comment on their child's work"* Teacher 1

Teachers at times would email parents and write up articles which are available on the school's website and school App regarding the work done in the classrooms. This is done so that the school community is kept abreast about the developments in the classrooms.

#### *4.7.3.3 Extended learning*

Both teacher respondents voiced that documentation helped them to address pupils' needs and that it gave them an opportunity to rectify misconceptions, particularly, in phase 1 of the study, they would take pupils for enrichment lessons which took place before school started or afterschool. Both teacher respondents agreed that the topic dealt with in phase 2 of the study was as a result of the discussions that they had while exploring the Olympic Games in their classes. This came up because teachers practiced the pedagogy of listening which is an important aspect in Reggio, they took notes based on what pupils said in their

classrooms. Both teachers agreed to plan lessons which were derived from previous discussions.

#### *4.7.3.4 Reflective learning*

Reflecting on previous work is of importance in a Reggio setting. This was achieved by having pupils and teachers using the documentation displayed on the bulletin boards to start discussions and to clarify misconceptions, particularly during the Maths lessons, particularly in phase 1 of the study. Pupils were given an opportunity to justify their thinking and from that, teachers would intervene in order to clarify those. Both teachers stated that having to reflect on their lessons helped them to get to know their pupils' learning styles and to ensure that they do not leave any of their pupils behind. Pupils were observed asking each other questions regarding their tasks, on both phases of the study, this got them to think about their tasks even more.

In phase two of the study, the affordances of iPads played an important role, pupils could easily revisit their audio recordings, pictures they took and it was easy for them to change.

#### *4.7.3.5 Collaboration*

Pupils collaborated together, they shared many ideas in the many lessons they were engaged in. They questioned each other and made suggestions to their peers. This became more frequent once iPads were introduced, they would help each other with the handling of the device and accessing information on the internet. Teachers would collaborate as well by sharing their classroom experiences and they would plan together the progression of lessons. Pupils used Airdrop and emails to share work with each other, particularly their eBooks, they would send pictures to their peers.

The technological affordances of the iPad; 'seamless integration' as stated by Drennan and Moll (2017) made it easy for pupils to collaborate. Pupils working in groups were observed discussing ideas on what was needed for their eBooks, they were observed assigning each other tasks of researching the information needed, and pupils would airdrop the pictures to the group's eBook collator. Pupils designed their eBooks leading to content creation which Drennan and Moll (2017) state leads to new pedagogies.

Pupils were observed teaching each other how to save a picture from the internet, others would tech how to move and resize a picture on the Book Creator App, from the observations it was clear that pupils had some knowledge on the use of an iPad.

**CHAPTER FIVE: Discussion of findings**

## 5.1 Introduction

The study sought to determine the extent which iPads are used in order to make thinking and learning visible in a Reggio inspired classroom. The broad expectation - the qualitative hypothesis, as it were - was that the use of the iPad would add various affordances which would add both breadth and depth to this documentation process by learners. This chapter discusses the findings from the preceding chapter, which provided a thick narrative of classroom activities, based on observations, photographs, field notes as well as interviews. This methodology sought to address the 3 sub questions:

- How is learning made visible prior to iPads?
- How is learning made visible once iPads are introduced?
- Does the introduction of iPads add any value?

The findings will be discussed as per the three sub questions

## 5.2 How learning is made visible prior to iPads

The first phase of the study addressed the first sub question: How is learning made visible prior to iPads? The classrooms and school which is the object of this investigation had established various methods through which pupils had learned to document their own learning. The study followed two Grade 3 classes in terms of the many different activities they were engaged in in different subjects at the time of data collection.

During this phase, learning was made visible through the ongoing display of pupils' written work on the bulletin boards based on the topics covered. These were continually revisited and the classes held discussions around each other's responses. This gave both teachers and pupils an opportunity to listen to each other in the full sense of the methodological intentions of Reggio Emilia. Teachers were seen to use the documentation to determine where their pupils were in terms of understanding concepts taught in class. In this manner, documentation was used as means of ongoing assessment, both formative and summative.

The evidence shows that teachers analysed and reflected on pupils' learning. Thinking routines, again a method derived from the Reggio Emilia approach, played a vital role in facilitating the classroom discussions. In particular, this was evident in the way in which the routines were deliberately based on open-ended questions. The discussions, class interactions and pupils' books were used as part of the documentation process as well. Reflecting on some of the limitations of this phase, relevant to the consideration of the affordances introduced by iPads, it is clear that lessons in phase one were conducted mostly in the classroom and the documentation was displayed in class under close supervision by the teacher. Pupils had little control over what was to be displayed or what was to be learned. This resulted in various restrictions on creativity, collaboration, and the like as pupils were necessarily focused on finishing the task at hand. Because of the nature of whole class activity, teachers in this phase tended to rely on worksheets they created or pictures they themselves found in magazines or the internet. The important analytic point here is that the time-bound, physical classroom space, and the kind of pedagogy that is possible within it, enables and constrains the possibilities for documentation of visible learning in particular ways. This is not to say that the teaching that took place in phase one was not creative, dynamic or 'learner centred'. Indeed it was, however, the affordances of the media used in this phase - hand writing, posters, cut out pictures, analogue photographs, etc. - are evident when considered in relation to what iPads make possible *for the same teaching and learning methodology*.

## 5.3 How learning is made visible once iPads are introduced

This phase focused on a much more structured theme, titled 'My Heritage', than was the case in phase one. Pupils were involved in a series of teacher initiated activities that addressed this broad topic, but it should be noted that the more thematic presentation of content in this part of the overall school curriculum may have meant more open-ended possibilities for learning. This section suggests that iPads make for more enhanced documentation of visible learning than was possible in phase one. The question arises, however, does the more structured theme speeds up the enhanced documentation of learning in phase two? The researcher believes the answer is no, because the added value discussed below is clearly about the affordances of the iPad itself. Although lessons were structured, revisiting work and related discussions were part of making learning visible just as in phase one; the advantage however was that phase two allowed for potentially

different learning environments. Pupils were not only confined to the classroom. Work was easily shared between pupils and the teachers. But these are identifiably affordances of the iPad and not, the researcher suggests, a function of the content.

In phase two, learning was made visible through emailing parents and teachers, content creation by pupils and using Airdrop to share content with peers. Pupils used Popplet App to brainstorm ideas and to organise their work, Camera Roll to take pictures and access saved ones. They used the Book Creator app to design and make their eBooks. They used the voice recording feature on the Book Creator app to do voice overs on some of their pages in their books, and then they would revisit their recordings and listen to themselves. This gave them an opportunity to change those recordings if they did not want to use them anymore or if they felt that they had forgotten to put in some information. Thinking routines and class discussions were used to document learning as well. Pupils were captured creating their own content in, documentation in this instance showed how pupils integrated their knowledge and personal stories. The eBooks created showed how pupils managed to merge different cultures into one that made sense to them.

In significant ways, iPads made it possible for pupils to take charge of their learning. They were listened to in a more systematic way, their ideas, thoughts and documentations were emailed to the teachers who then forwarded these to parents and in class, pupils were given the opportunity to share their books with the class using Airserver software, which works like the Apple TV mentioned by Drennan and Moll (2017) as one of the iPad capabilities.

Analytically speaking, the iPad enables transcendence of the boundedness of the physical classroom. Pedagogy is possible over more extended periods of time, and the 'virtual' extensions of the classroom made possible by iPads enable and constrains the possibilities for documentation of visible learning in significantly enhanced ways. iPads considerably enhance *the same teaching and learning methodology* as was evident in phase one.

## 5.4 The value added by the introduction of iPads

In both the phases of the study, the basic procedures and pedagogic emphases of the Reggio Emilia approach were evident. Learning was made visible through teaching and

enabling children to use their own work to document, reflect on and understand their own learning. A key part of the overall methodology was evident in both phases of the study. Teachers and pupils continually revisited previous work and reflected on it.

However, from the classroom observations, related interviews and other data gathering (field notes, photographs, etc,) carried out in this study, it was clear that iPads did bring about a difference. According to Drennan and Moll (2017), discussed in the literature chapter, the iPad has many capabilities which lead to distinctive technological and pedagogical affordances. Though pupils worked collaboratively prior to the introduction of iPads, collaboration was not as clear and effective as in phase two. The introduction of iPads made collaboration interesting and unique in a way that enabled pupils to share work with ease. The iPad afforded pupils with an opportunity to use the different applications available. Phase two of the study became more project based - not just a function of the thematic presentation of content, but an overall affordance of the iPad itself - so that, instead of just revisiting work done on the iPads and discussing it in a constrained classroom space, pupils were challenged to plan and create their own eBooks relating to their heritage or culture using the iPad. Pupils' thinking was challenged as they were planning and designing their eBooks. They had to plan, access and organise information with little help from their teachers. Pupils enjoyed working on the iPads. The affordances of iPads made it possible for pupils to manipulate the content of their book. By using the iPad's build-in camera to take pictures and save them, pupils could easily change these in terms of size and layout relating to the project they were doing instead of drawing in their books. Some pupils took pictures of their drawn work and made use of it on their eBooks. The portability of the iPads afforded pupils with the opportunity of moving around so as to find a comfortable working space, pupils were not restricted to their classrooms. Pupils also liked sharing information and the convenience of accessing their work in a much simpler manner. Using apps like Book Creator and Popplet, pupils found it easy to plan and organise their work. The multimodality of the iPad offered pupils an opportunity to produce beautiful and creative eBooks, these led to learning being made visible. Pupils also enjoyed having to transfer work from their books onto the iPads using Camera roll. They found it easy to organise everything they needed for their eBooks. Pupils used Airserver (screen mirroring software) to present their eBooks to the class, they loved taking the class through their books.

The overall analysis of the value added by the distinctive affordances of iPads, then, is one of many more ways of documenting, reflecting on and understanding the thinking of pupils by the pupils themselves. The iPads add pedagogical dimensions, in that they extend the boundaries and overcome the time-boundedness of the physical classroom. But fundamentally, they enhance and strengthen the already strong Reggio Emilia pedagogy.

## 5.5 Conclusions

This study focused on two Grade 3 classes in a Johannesburg private school in order to determine how iPads can be used to document what Reggio Emilio pedagogy understands to be *visible learning*. As stated in Chapter 2 of this study, iPads are viewed as devices that have potential to enhance teaching and learning. They are said to bring about enhanced pedagogical practices (Drennan and Moll, 2017). With regards to the findings of the study, there are various conclusions to be drawn.

Concretely, the study sought to better understand how learning in these classrooms is documented with iPads in making learning and teaching more visible. Phase one focused on traditional means of documentation, focused on worksheets, exercise books and bulletin board displays. Teachers and pupils gathered around the bulletin board and continued with discussions. This practice had enabled a rich Reggio Emilia pedagogy to develop in the school. However, the disadvantage with it was that not every pupil in class was as closely in touch with the ongoing teaching as they might have been: they could not always see what was being discussed. For teachers, it was time consuming and often detracted from the flow of the lesson. In Mathematics lessons, for example, teachers had to create posters and use thinking routines to develop concepts. Throughout the second phase of the study, the researcher observed that pupils enjoyed using iPads in the classroom, and thus remained motivated and more in touch with their learning throughout. This is mainly because the devices are easy to handle and offered both pupils and teachers and opportunity to find new learning spaces instead of being confined to the classroom. Teachers also appeared to enjoy iPads; they were able to prepare relevant content and

teaching aids for possible use in advance, and thus structured and delivered lessons more easily.

iPads helped pupils think about their own work more powerfully - they *organise* their thoughts, and *represent* their thoughts by taking pictures of work they have done in their books, searching for pictures online, and using them in their final product (an eBook). They *enhance* their own thinking because the flexibility of the iPads made it possible for pupils to be creative in the organisation of their work.

These are all notable affordances of the iPads in and beyond the classroom. From a Reggio Emilia perspective, the various affordances of iPads make it easy to document learning in multifaceted ways. The use of the many different Apps allowed pupils to be creative and to present their thinking in a different way from traditional methods. The affordances of iPads also allowed for seamless collaboration, sharing of work and ideas which led to pupils being proud of their work and learning from each other. The iPads portability made it easy to move around. The documentation of learning took place even outside the classroom. Pupils were observed going to different locations around the school to record themselves. They were observed planning, organizing work on the iPad for their eBooks, they researched and collected all information they needed for their eBooks, Apps like Popplet made planning and organization of work easy.

The findings of this study have painted a picture of how iPads are used in the documentation of visible learning. The study focused on a small sample of participants, it may not be representative of all individuals in the population. However, the study contributes by adding on to the available literature on the effective use of iPads in the classroom. Though this study focused on a small sample, the study suggests further research of a multimodal nature in this manner into the use of different Apps of ICTs in education. In future studies, teachers may need to focus more on how they use own devices to document learning in their classroom instead of depending on pupils' documentation.

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# APPENDIX A

LETTER TO THE PRINCIPAL DATE

Dear Headmistress

In addition to being a teacher at St Mary's School. I am also a part time MEd student at the school of education at the University of the Witwatersrand. As part of this program, I would like to conduct a research study on: Exploring the use of iPads in the documentation of visible teaching and learning: A case study of a Grade 3 Reggio Emilia inspired classroom.

This research seeks to investigate how digital technologies, particularly iPads, contribute to the documentation of visible teaching and learning. In essence, the research will investigate how learning is made visible using iPads, and what value the introduction of iPads adds in the documentation of visible teaching and learning. The research explores if using iPads would engage learners and give them the opportunity to document their thinking and learning so as to make it visible. The research will also explore if using iPads would enable teachers to help learners learn visibly after school hours. This study will contribute to the available literature on the pedagogical use of iPads and will inform teachers about the impact of using iPads in the documentation of visible teaching and learning.

The reason why I have chosen our school as the research site is because the school makes use of the Reggio Emilia inspired approach to teaching and learning, which promotes visible teaching and learning. At the heart of the Reggio approach is the documentation of learning. The school already uses iPads in the teaching and learning process. I think that this will be an opportunity to explore the idea of the documentation of visible learning using the thinking routines from the book "Making thinking visible" by Ron Ritchhart.

I am inviting our school to participate in this research. I would like to conduct the research with all 54 Grade 3 learners and their 2 teachers as they have been much more exposed to the Reggio Emilia approach. I think the research participants may somewhat

benefit from this study as it might help them to learn and reflect about the documentation of visible learning. They will be reassured that they can withdraw their permission at any time during this project without any penalty. There are minimal foreseeable risks in participating in this study. The study will use participants' photographs, however, the faces on the photographs will be blurred so that the identities of the participants will not be compromised, in addition to this, pseudonyms will be used in the documentation of research data. The participants will not be paid for this study. Semi-structured interviews will be conducted with the participating teachers; this will be done during school hours.

The names of the research participants and identity of the school will be kept confidential at all times and in all academic writing about the study. Your individual privacy will be maintained in all published and written data resulting from the study.
I will present what I have learned to you as our school principal so that it can be useful to other teachers.
All research data will be destroyed between 3-5 years after completion of the project.

Please let me know if you require any further information. I look forward to your response as soon as is convenient.

Yours sincerely

Nelisiwe Phakathi

Signature:

# APPENDIX B

INFORMATION SHEET TEACHERS DATE

Dear Teacher

In addition to being a teacher at St Mary's School. I am also a part time Master of Education student at the school of education at the University of the Witwatersrand. As part of this program, I will be conducting a research study on: Exploring the use of iPads in the documentation of visible teaching and learning: A case study of a Grade 3 Reggio Emilia inspired classroom.

This research seeks to investigate how digital technologies, particularly iPads, contribute in the documentation of visible teaching and learning. In essence, the research will investigate how learning is made visible using iPads, and what value the introduction of iPads adds in the documentation of visible teaching and learning. The research explores if using iPads would engage learners and give them the opportunity to document their thinking and learning so as to make it visible. The research will also explore if using iPads would enable teachers to help learners learn visibly after school hours. This study will contribute to the available literature on the pedagogical use of iPads and will inform teachers about the impact of using iPads in the documentation of visible teaching and learning.

Most of what I am looking at in the study is the learners' normal school work. I will be taking photographs of you and the learners which will show the interactions they have with their peers and with you. I will also be taking photographs of the work produced by learners e.g. worksheets, drawings and projects. I will be taking notes which will provide information of the learners' interaction with their peers and their teacher. All this will happen during school hours; there will be no extra work because of my project.

I would like to invite you along with the girls in your class, to participate in the study. The reason why I have chosen your class is because all learners have access to the school iPads. I will be observing and taking photographs of their work. I will also interview you with regards to the work being done in class, the interviews will not interfere with your teaching time, these will be conducted at your convenience.

Your participation in this project is completely voluntary. You are free to withdraw your permission for your participation at any time and for any reason without penalty. These decisions will have no effect on your future relationship with the school or with me. There are minimal foreseeable risks in participating and these relate to your photographs to be used. In order to ensure that your identity will not be compromised, your face on the photographs will be blurred, in addition to this, pseudonyms will be used in the documentation of research data. You will not be paid for this study.

Your name and identity will be kept confidential at all times and in all academic writing about the study. Your individual privacy will be maintained in all published and written data resulting from the study. However, I will write an article or report based on the interesting things I will learn in this study. I will also present what I have learned to our school principal so that it can be useful to other teachers. All research data will be destroyed between 3-5 years after completion of the project.

I look forward to working with you. I think that my research will be of value for the teachers who participate and will help them to learn more about the documentation of visible learning.

Please let me know if you require any further information.

Thank you very much for your help.

Yours sincerely,
Nelisiwe Phakathi

Signature:

# APPENDIX C

INFORMATION SHEET PARENTS DATE

Dear Parents/Guardians

In addition to being a teacher at St Mary's School. I am also a part time Master of Education student at the school of education at the University of the Witwatersrand. As part of this program, I will be conducting a research study on: Exploring the use of iPads in the documentation of visible teaching and learning: A case study of a Grade 3 Reggio Emilia inspired classroom.

This research seeks to investigate how digital technologies, particularly iPads, contribute in the documentation of visible teaching and learning. In essence, the research will investigate how learning is made visible using iPads, and what value the introduction of iPads adds in the documentation of visible teaching and learning. The research explores if using iPads would engage learners and give them the opportunity to document their thinking and learning so as to make it visible. The research will also explore if using iPads would enable teachers to help learners learn visibly after school hours. This study will contribute to the available literature on the pedagogical use of iPads and will inform teachers about the impact of using iPads in the documentation of visible teaching and learning.

Most of what I am looking at in the study is the learners' normal school work. I will be taking photographs of learners which will show the interactions they have with their peers and with their teacher. I will also be taking photographs of the work produced by learners e.g. worksheets, drawings and projects. I will be taking notes which will provide information of the learners' interaction with their peers and their teacher. All this will happen during school hours; there will be no extra work because of my project. Please know that this is not a test and it is not for marks.

I would like to invite your child, along with about 53 of her classmates, to participate in the study. The reason why I have chosen your child's class is because all learners in her class have access to the school iPads. I will be observing and taking photographs of their work.

Your child's participation in this project is completely voluntary. In addition to your permission, your child will also be asked if she would like to take part in this project. Any child may stop taking part at any time. You are free to withdraw your permission for your child's participation at any time and for any reason without penalty. These decisions will have no effect on your future relationship with the school or your child's status or grades there. There are minimal foreseeable risks in participating in this study and these relate to the photographs of your child that will be used. In order to ensure that the identity and safety of your child is not compromised, the face of your child on the photographs will be blurred. Your child will not be paid for this study.

Your child's name and identity will be kept confidential at all times and in all academic writing about the study. Her individual privacy will be maintained in all published and written data resulting from the study. However, I will write an article or report based on the interesting things I will learn in this study. I will also present what I have learned to our school principal so that it can be useful to other teachers. All research data will be destroyed between 3-5 years after completion of the project.

I look forward to working with your child. I think that my research will be enjoyable for the children who participate and will help them to learn about the documentation of visible learning.

Please let me know if you require any further information.

Thank you very much for your help.

Yours sincerely,
Nelisiwe Phakathi

Signature:

# APPENDIX D

INFORMATION SHEET LEARNERS DATE

**To be verbally communicated with the learners.**

*All learners in grade 3 will be gathered in the hall where a brief summary of the research will be shared with them.*

Information about what will happen to them when and if their parents allow them to participate in the study will be shared with them. Information includes the use of learners' photographs and artefacts they produce. They will be told that their work will not affect their grades.

Learners will be clearly informed that participation in the study is voluntary, which means that they don't have to do it. They will be made aware that no one will be upset if they don't want to do this. Also, if they decide halfway through that they prefer to stop, this is completely their choice and will not affect them negatively in any way.

Learners will be told that this study will not hurt them in any way, however, they will somewhat benefit from the research because they may learn and think about the documentation of visible learning using iPads.

Learners will be told about who will know about the study. They will be made aware that I am going to keep what we do in class to myself. However, I will write an article or report based on the interesting things I will learn in this study. I will also present what I have learned to our school principal so that it can be useful to other teachers. I will not be using their own name but I will make one up so no one can identify them. All information about them will be kept confidential in all my writing about the study. Also, all collected information will be stored safely and destroyed between 3-5 years after I have completed my project.

Learners will be informed that their parents have been given an information sheet and consent form. They will be told that at the end of the day it is their parents' decision to allow them to participate in the study.

Teacher Consent Form

Please fill in the reply slip below if you agree to participate in my study called:
Exploring the use of iPads in the documentation of visible teaching and learning: A case study of a Grade 3 Reggio Emilia inspired classroom.

My name is: _____

| **Permission to review/collect documents/artifacts** | **Circle one** |
|---|---|
| I agree that photographs of my work can be used for this study only. | YES/NO |
| **Permission to observe you in class** | |
| I agree to be observed in class. | YES/NO |
| **Permission to be photographed** | |
| I agree to be photographed during the study. | YES/NO |
| I know that I can stop this permission at any time. | YES/NO |
| I know that the photos will be used for this project only. | YES/NO |
| I know that photos used in this thesis or published, faces will be blurred. | YES/NO |
| **Permission to be interviewed** | |
| I would like to be interviewed for this study. | YES/NO |
| I know that I can stop the interview at any time and don't have to answer all the questions asked. | YES/NO |

**Informed Consent**
I understand that:

- My name and information will be kept confidential and safe and that my name and the name of my school will not be revealed.
- I can withdraw from the study at any time.
- I can ask not to be photographed.
- All the data collected during this study will be destroyed within 3-5 years after completion of the project.

Sign_____ Date_____

Parent's Consent Form

Please fill in and return the reply slip below indicating your willingness to allow your child to participate in the research project called: Exploring the use of iPads in the documentation of visible teaching and learning: A case study of a Grade 3 Reggio Emilia inspired classroom.

I, _____ the parent of _____

| **Permission to review/collect documents/artifacts** | **Circle one** |
|---|---|
| I agree that my child's photographed work can be used for this study only. | YES/NO |

**Permission to observe my child in class**

| | |
|---|---|
| I agree that my child may be observed in class. | YES/NO |

**Permission to be photographed**

| | |
|---|---|
| I agree that my child may be photographed during the study. | YES/NO |
| I know that I can stop this permission at any time. | YES/NO |
| I know that the photos will be used for this project only. | YES/NO |
| I know that photos used in this thesis or published, faces will be blurred. | YES/NO |

**Informed Consent**

I understand that:

- My child's name and information will be kept confidential and safe and that my name and the name of my school will not be revealed.
- She does not have to answer every question and can withdraw from the study at any time.
- She can ask not to be photographed.
- All the data collected during this study will be destroyed within 3-5 years after completion of the project.

Sign_____ Date_____