The University Of Sheffield.

Reading and Writing in the Digital Age: Exploring Two Classes in a Maltese Primary School

Melanie Darmanin

A thesis submitted to the University of Sheffield

for the Degree of Doctor of Philosophy in the School of Education

August 2017

Acknowledgments

Sincere gratitude and thanks goes to all of those who contributed, supported and guided me through the writing of this thesis. I would firstly like to thank the teachers and the students who allowed me to share their contribution and insights throughout this study. I would also like to thank the head of school and the assistant heads of the school concerned. Thank you all for being so patient and for providing me with the necessary data.

Thank you to my supervisors Dr.Rachael Levy and Professor Cathy Nutbrown who have both supported and guided me throughout this process and provided me with constant feedback. Thank you both for finding the time to meet and to discuss my progress at the weekend studies. From the bottom of my heart I would like to thank you for your continuous and impeccable help throughout this memorable journey. I would not have done it without you!

My gratitude and world of thanks also goes to all academics from the School of Education. Thank you for giving me the opportunity to share my work with others, to reflect, criticise, discuss, build new friendships and to academically grow during the study weekends organised in Malta.

Special thanks goes to my family; to my parents Joe and Joyce, my very own educators of life who have always stood by me and gave me the courage and support I needed. A final heart warming thanks also goes to my daughter Emma. Emma, thank you for your hugs and kisses through moments of pressure.

Abstract

As the title of this thesis hints, this research has focused on three main pillars in education; 'reading', 'writing' and 'digital technology'. The study's main aim was to explore how constructions of reading and writing are changing in the 21st Century. It further investigated the definitions of 'reading' and 'writing' and teachers' and Grade 3 students' views on the role of digital technology in reading and writing in the classroom.

This research used a qualitative case study approach and data were mainly gathered from two Grade 3 classes in the same school. Classroom observations, focus group interviews and semi-structured interviews were the main research tools used. During the study, I continued working as a class teacher in one of the Grade 3 classes; in addition this same class was also participating in the 'One Tablet per Child Pilot Project'. This pilot project's main aim was to evaluate the use of tablets in the Maltese classroom context. Although data were collected from two different Grade 3 classes, the means of teaching and learning were quite different since the students in my class each made use of a personal tablet. This enabled me as a researcher to compare and contrast both classrooms which helped me better understand how constructions of reading and writing are changing due to technological advancements and use in Maltese classrooms.

Data from this study showed that constructions of what it means to be a reader and writer in the digital age are changing. In particular this study found that definitions of these terms now include physical interaction with texts. Observations showed that when students read and write through the media of digital technology, they collaborate and interact more and they make use of skills such as skim reading, viewing, reading of images, multidirectional reading and sharing information through sound and visuals. This study also revealed that digital technology is challenging accepted definitions of what the terms 'reading' and 'writing' actually mean, given that participants often found it difficult to distinguish between the two.

Contents

List of figures

List of tables

CHAPTER 1

Introduction

Chapter 1: Introduction

1.1 Introduction

> We consider our efforts to improve levels of literacy to be an important factor in ensuring that everybody feels included in Maltese society... Our educators need to keep developing and fine-tuning their language teaching and learning methods to enthuse their students and to motivate them to learn more, through the use of technology and beyond (Bartolo, 2014, p.6).

In the foreword article of the 'National Literacy Strategy for all in Malta and Gozo 2014-2019', the Minister for Education and Employment, Hons. Evarist Bartolo, emphasised the importance of improving levels of literacy in order for students to feel included in Maltese society. Bartolo (2014) also recognised that this needs to be carried out through the use of technology. The National Literacy Strategy for all in Malta and Gozo (2014) highlights the importance for all stakeholders to have a common vision regarding the objectives for the development of literacy and language abilities through new digital technologies.

The document also emphasises that schools are to be supported in order to adopt the relevant eContent to the literacy needs of students and that the use of mobile technologies in teaching and learning should be supported. The National Literacy Strategy for all in Malta and Gozo (2014) further proposed over one hundred policy measures so that it is ensured that all Maltese citizens have had the opportunity to acquire the skills required for them to lead 'fulfilling lives' (p.6). These have been proposed in the light of a major European concern due to the fact that the number of students who do not obtain these basic skills is increasing (The High Level Group of Experts on Literacy, 2012)

It is further evident that literacy needs to be understood in its own context and that it is being influenced by economic, social and technological factors (Kress, 2003). In his book 'Literacy in the New Media Age' Kress (2003) elaborates on two main shifts which are occurring in the 21st Century in relation to literacy and digital technology. Kress (2003) argues that writing of printed text is shifting towards the

dominance of the image whilst the presence of the book is moving and shifting in response to the dominance of the screen. The literature in this field shows that digital technological advancements are impacting, influencing and also changing the meaning of what one understands by the terms 'reading' and 'writing' (Kolikant, 2010; Kress, 2003; Tyner 1998).

Consequently substantial advancement in curriculum pedagogies and technologies has changed the way students and educators interact with texts. Rapid developments in digital technology are shaping and re-defining 'literacy' and therefore the educational system must prepare students for a setting in which 'screen text' is taking on additional prominence (Kress, 2003). However this is difficult when we do not yet fully understand what reading and writing actually are now that we are firmly situated within a digital age. This study addresses this need as it primarily focuses on answering the question 'what is reading and writing in the digital age?'

1.2 My background

Working in the field of education as a primary school teacher for over nine years has enabled me to witness changes in the way written text is produced, presented and read within the classroom setting. During my teaching career I have always worked with very young children and have therefore taught reading and writing on a daily basis. Moreover I have always had a particular interest in the teaching of reading and writing. For example during the first few years of my teaching career I carried out a reading programme through the Foundation for Education Services. This programme with the name of 'Nwar' took the form of one-to-three literacy support, involving the participation of a parent, guardian or relative who attended with the student. During the same period I also organised a writing programme based on workshops through The Malta Writing Programme. This programme catered for parents and through hands-on workshops the parents learned more about journal writing and how they could help their children plan, draft and revise their creative writing at home.

As a practitioner I have always believed that reading and writing are both very important concepts in the field of education. However, over the years I have become increasingly aware that the ways in which children and adults read and write, are changing. In particular it is clear that advances in digital technology are influencing how children make sense of texts, and produce text. In other words, digital technology is influencing the very constructions of reading and writing and what it means to be a reader and a writer. I believe it is imperative that such changes are recognised in the educational system in order for education to be more relevant to the lives of students of the 21st Century. Moreover, teachers will be able to develop their teaching in a more effective manner if they cultivate and develop an understanding of this change. As educators we are also responsible for providing a positive repositioning of literacy as an important, professional and academic skill.

A personal and professional interest around the topic of digital technology and its influences on reading and writing has encouraged me to carry out research to investigate how children are reading and writing through the context of digital technology. Throughout my teaching years I have witnessed various technological devices being introduced within the classroom setting. I have witnessed the introduction of interactive whiteboards and projectors as well as the teachers' laptops. During the 2014-2015 scholastic year I also had the opportunity to participate in the 'One Tablet per Child Pilot Project' and at that time the students in my class were provided with a tablet each which was used within the classroom context on a daily basis. This innovative learning resource assisted students with their reading and writing tasks and I also had the opportunity to use it as a teaching resource. This presented the ideal opportunity to carry out research and observe how 'old' and 'new' technological devices are influencing students' reading and writing of text.

Further information about the pilot project will be provided in Section 1.4 of this chapter whilst the following section will explore the main research aims and objectives of the study presented in this thesis.

1.3 Exploring research aims and objectives

This study begins from a position recognising that digital technology has had a major impact on the ways in which the terms 'literacy' and 'text' are defined and utilised in the 21st Century (Rowsell and Walsh, 2011). This includes how students analyse and produce text. Although there has been a vast amount of literature related to children's interactions with digital technology, there is very little about how this technology has impacted upon the ways in which students read and write text. As educators I feel we still do not know how digital technology impacts upon children's interactions with text and, in particular, how this influences their own reading and writing.

Exploring children's reading and writing of text in the digital age interests me personally since, as a practitioner, I use digital technology to teach reading and writing to students. Furthermore, although we are beginning to include interactions with digital technology in policy and discussions about reading and writing, the whole concept of what reading and writing now means is very under explored – in all countries (Merchant, 2007). This is also particularly the case in Malta and it therefore provided further justification for the importance of this study. Lack of local research has encouraged me to investigate a topic which highly interests me and which is important given that this study has implications that do not only include, but extend beyond the Maltese context.

Digital technologies are impacting the way students are learning. The literature shows that there has been a shift from reading and writing using pen and paper to a use of new technologies as tools of communication (Merchant, 2007; Kress, 2003). Dowdall (2006) also reported that:

> both the factors that play on children's text production and the multimodal possibilities afforded by new technologies need elaborating in order to understand how children's text production is evolving with the technological revolution, in order that relevant and meaningful pedagogies can be developed (p.40).

Whilst a lot of research and local policies have focused on this notion the report 'Attitudes to Reading and Writing and their Links to Social Mobility 1914-2014' emphasises the need 'not only to recognise the impact of digital technology, but to actively strive to understand how advancement in media and electronic text are changing constructions of literacy, text and notions of what it means to read and write today and in the future' (Levy, Little, Clough, Nutbrown, Bishop, Lamb, Yamada-Rice, 2014, p.3) and this is the main aim behind this research. The point being made here is that when one looks back into history it becomes clear that constructions of literacy are fluid and have changed over the years (Levy et al., 2014). Therefore the report shows that constructions of literacy have no 'fixed shape' and what was meant by 'literacy' a hundred years ago is different to what it means today. As a consequence constructions of literacy are changing rapidly, because of digital technology, yet we have not managed to research this at the same pace.

The main aim behind the study reported in this thesis is to explore how technology has had an impact upon children's constructions of reading and writing of text. It further investigated what teachers and students understood by the terms 'reading' and 'writing'. The title chosen for this dissertation is 'Reading and Writing in the Digital Age: Exploring Two Classes in a Maltese Primary School' and the three main research questions which underpin this study are:

1) How are children reading and writing in the digital age?
2) How do students and teachers define reading and writing in the 21st Century?
3) What are teachers' and students' views on the role of technology in reading and writing in the classroom?

The research questions show that this study focused on the perceptions of both students and teachers. The study also sought to understand the students' and teachers' definitions of reading and writing and explored their views on the role of technology in reading and writing in the classroom. In order to understand this better the section that follows will address the context of study.

1.4 The context of study

I teach in a local primary government school situated in the central part of Malta. Due to its central location the school is opening its door to different nationalities. It is a mixed school; both girls and boys attend and it is run by a female head of school and two assistant heads. Two classes are allocated to each year group.

For the purpose of this study data were collected within my working environment. Collecting data from the environment in which I work was practical because this reduces access problems (Cohen, Manion and Morrison, 2010). As a researcher I was not guarded by 'gatekeepers' or persons who controlled my access to the school concerned. Morrison (2006) found that whilst conducting educational research the researcher might encounter several problems such as gaining access to schools and its participants and gaining permission from the participants and school principals. Being able to carry out research within my working environment has facilitated this process and as a researcher I did not encounter any of these difficulties. Nevertheless I still made sure that my research was conducted ethically and all relevant parties were informed and asked for consent where appropriate.

At the beginning of the study a meeting was held with the head of school and assistant heads. During the meeting I explained the aims behind my research and how I planned to collect the data. At the end of the meeting the head of school and assistant heads provided me with oral consent and explained that they would be very supportive throughout the process. The head of school also asked me to present her with the findings and a copy of the thesis once the research was finalised. She further explained that this research should help her have a clear understanding of what it means to be a reader and writer in the context of the school she is in charge of and such an understanding will eventually be useful in order to build a practical action plan in the school development plan for literacy.

Data were mainly collected from two Grade 3 classes during school hours. The layout and the sizes of the classrooms in the school concerned were quite similar. Like all the classrooms in the school both Grade 3 classes had an interactive

whiteboard at the front of the classroom and next to it a traditional whiteboard. Both classes had a laptop cabinet at the front of the classroom which made it easier for the teacher to connect the laptop with the interactive whiteboard. At the back of each class were four computers with Internet access. These were normally used during break time or when students finished off a school work task. A class library was also at the back of the classroom in Grade 3.1. The library consisted of two shelves on top of a small table. Next to the library was a small wooden bench with cushions which the children could use for reading. Grade 3.2 had two small reading corners at the back of the classroom. One of the reading corners displayed a number of books on a half-round table whilst another two shelves similar to those in Grade 3.1 were on the other side of the classroom. As the photos in Figure 1.1 and 1.2 show both classrooms have access to the following technological devices: four computers, of which one was connected to a printer, an interactive whiteboard, a projector and the teacher's laptop.

Figure 1.1: ***Classroom photos - Grade 3.1***

Figure 1.2: ***Classroom photos - Grade 3.2***

Data were collected during the course of one academic year from September 2014 to July 2015 and during the time of the study the school was participating in the 'One Tablet per Child Pilot Project'. The chosen class for this pilot project was Grade 3.2 – the class I taught. Each student was given a Samsung Snote at the beginning of the scholastic year and their parents were asked to sign a memorandum of agreement. The pilot involved twenty schools including primary state, church and private schools. About 350 students across Malta in Grades 3, 4 and 5, 32 teachers and 21 learning support assistants took part in the pilot project which was set to determine which tablet brand should be chosen and how it should be distributed for all students in private, church and state schools as from the fourth grade in primary classrooms (Department of eLearning, 2015).

The teachers, including myself, were all volunteers and the teachers' participation was also covered by an agreement with the Malta Union of Teachers. The pilot project was launched in March 2014 and all participating teachers received training by the tablet providers and by the academic staff at the Department of eLearning. An evaluation report was drafted after the six-month pilot project and its recommendations were used in order to prepare for the introduction of the use of tablets in all Grade 4 classes in Malta.

During the time of the pilot project the teachers also made use of a virtual learning environment through a page on Fronter. Fronter is an e-learning platform which is very similar to a virtual school. Through the virtual learning environment, concerns, resources and any technical reports were shared and reported. Fronter could also be accessed by the teachers participating in the project as well as eLearning teachers and administrators. At the beginning of the pilot project the students in Grade 3.2 were also told that they needed to bring the tablet to school on a daily basis and with the help of their parents they needed to ensure that the tablet was brought to school with a fully charged battery. The chosen class was also presented with a list of rules which they were asked to follow in order to minimise breakages and any losses.

The pilot project itself was closely connected to the study reported in this thesis and it also influenced the flow of this research. Students and learners are continuously being exposed to digital technological devices at home and it can be observed that the use of digital technology is also being filtered into today's classrooms. Therefore the pilot project served as a golden opportunity to examine a phenomenon which is influencing the lives of all children today.

1.5 Thesis overview

This thesis is organised in the following eight chapters: Chapter 1: Introduction, Chapter 2: Literature Review, Chapter 3: Research Methodology, Chapter 4: Perceptions of Technology in relation to Reading and Writing, Chapter 5: Reading in a Digital Age, Chapter 6: Writing in a Digital Age, Chapter 7: Reading and Writing: A New Conceptualisation and Chapter 8: Summary and Conclusions.

This chapter has introduced the subjects and main topics researched and provided a short description of my background as a researcher. Section 1.3 of this chapter has also outlined the main aims behind this research and the research questions formulated. Following this chapter is the Literature Review which presents a critical discussion of definitions of 'reading', 'writing', 'literacy' and other forms of literacy presented in the literature. The Literature Review also looks through local Maltese policies and presents a critical review on the use of technology and its impact on the learning and teaching of reading and writing in the 21st Century.

Chapter 3 focusses on the research methodology and justifies the choice of the different tools used in order to carry out this research. This chapter also provides a clear overview of the type of analysis used. The data gathered were analysed through thematic analysis and all of this content is presented in Chapters 4 – 7 which specifically address the findings, discussion and analysis. Chapter 4 presents the teachers' and students' perceptions of technology in relation to reading and writing. Chapter 5 explores reading in a digital age whilst Chapter 6 discusses the concept of writing. Chapter 7 presents a conceptualisation of reading and writing and shows that there appears to be a developing synergy between reading and writing, to the point that some of the children at times found it difficult to

differentiate between the two. The last chapter of this thesis concludes and summarises the main findings. Chapter 8 also presents a number of limitations encountered and recommendations for further study.

CHAPTER 2

Literature Review

Chapter 2: Literature Review

2.1 Introduction

Reading and writing are regarded as important and fundamental concepts in the field of education. In fact a number of policies, national curricula as well as educational reports focus on 'literacy' and its importance within the education system. Additionally, literacy 'has become central to debates on policy and practice in education in the UK and English speaking countries' (Hannon, 2000, p.1) and the same can be argued for the Maltese context. 'Literacy' is key to the rest of the curriculum because without it students cannot access the rest of the curriculum. Traditionally, literacy is regarded as the ability to read and write. However, this chapter will show that the term 'literacy' has come to take on a broader meaning.

This chapter is presented in three main parts. Since one of the main aims behind this research study was to define what reading and writing are in the digital age, this chapter starts by exploring definitions of 'literacy'. In addition the first part of this chapter will show that constructions of literacy are changing because of digital technology; before addressing what reading and writing actually are, it is important to see what the literature presents about the use of digital technology in relation to 'literacy'.

This leads to the second part of this chapter which explores teaching and learning to read and write in the digital age, student achievement in reading and writing through the use of digital technology and an understanding of advantages and disadvantages of using technology in the classroom. Since this research study is set in the Maltese context it is necessary to examine the educational context in which it is situated and therefore the final section of this chapter will give a clear picture of the Maltese context, focusing on local policies and their aims in relation to digital technology and literacy.

2.2 Defining 'literacy'

Many scholars, policymakers and practitioners have attempted to define 'literacy' (Roberts, 1995) and understandings of literacy have developed and changed significantly over the past fifty years (UNESCO, 2006). One of the chapters in 'The Education for All Global Monitoring Report' published by UNESCO (2006) elaborates on the understandings of literacy and introduces the topic by stating that at first glance, 'literacy' would seem to be a term that everyone understands. At the same time, 'literacy as a concept has proved to be both complex and dynamic, continuing to be interpreted and defined in a multiplicity of ways' (p.147). Collins and Blot (2003) refer to literacy as 'a curious thing' which 'seems to envelope our lives and be central to modern living' (p.1). 'Literacy' is also regarded as a 'debased term' (UNESCO, 2006, p.150) and as 'an intrinsically interesting topic, worthy of study for the insights it can give us about who we are, what we would like to become and how we conduct our communal affairs' (Street and Lefstein, 2007, p.7).

Ahmed (2011) attempted to answer the question 'How is literacy understood?' and also agrees that literacy has evolved over time. In order to substantiate this belief he refers to UNESCO's changing definitions of literacy across time. These are presented in Figure 2.1 which shows how the definition of literacy has evolved over time.

(a) A person is literate who can, with understanding, both read and write a short simple statement on his or her everyday life (UNESCO, 1958).
(b) A person is functionally literate who can engage in all those activities in which literacy is required for effective functioning of his or her group and community and also for enabling him or her to continue to use reading, writing and calculation for his or her own and the community's development (UNESCO, 1978).
(c) Literacy is the ability to identify, understand, interpret, create, communicate and compute using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve his or her goals, develop his or her knowledge and potential, and participate fully in community and wider society (UNESCO, 2005).

Figure 2.1: ***UNESCO's definitions of literacy across time***
Source: Ahmed, 2012, p.181

Other practitioners, scholars and data reported by National Ministries of Education also refer and denote UNESCO's definitions of literacy; namely 'literacy' as the ability to read, write and think in a critical manner (Bartlett, 2008). UNESCO (2006) also compiled national data from 107 different countries around the world which attempted to define 'literacy' and 'illiteracy'. Data was namely gathered through various assessment methods and were carried out from 1995 to 2004. About 80% of the countries defined 'literacy' as 'the ability to read and/or write simple statements in either a national or native language' (UNESCO, 2006, p.157). The terms 'read' and 'write' were both present and repeated in most definitions presented by the countries concerned. Kress (2003) also hints that reading and writing form an important role in what constitutes as 'literacy'. In fact, Kress (2003) states that 'literacy' is a term we use when 'we make messages using letters as the means of recording that message' (p.23).

Other practitioners have chosen to address the definition of 'literacy' in a broader manner and state that to define 'literacy' as the ability to read and write is an understatement and a small part of a larger puzzle (Roberts, 1995). Freire (1998) supported this contradiction when he stated that literacy is not just about reading the *word* but also reading the *world.* Roberts (1995) succinctly expresses similar thoughts and describes such definitions as 'an incomplete statement' because one needs to consider 'questions regarding what one reads and writes, and 'how much' ability in reading and/or writing is required' (p.413). Kress (2003) also states that 'literacy is by no means all there is to contemporary communication' (p.21). Kress (2003) argues that there are various modal resources which are involved in the process of communication such as; word, written or spoken, music and objects such as 3D models and images.

The High Level Group (2012) in their final report titled 'EU, High Level Group of Experts on Literacy' focus their work on literacy skills in Europe and elaborate on the view that literacy has many dimensions and is linked with digital and social competences as well as numeracy. They continue by arguing that some definitions of literacy have a 'narrow focus' whilst others also take in 'cognitive, affective, motivational, socio-cultural, cultural-historical, creative and aesthetic' aspects into

consideration (p.7). On such basis, the High Level Group (2012) move forward from UNESCO's definition and proposed a multilayer approach to defining literacy. This is presented in Figure 2.2. Their proposed multilayer approach to defining literacy is split on three levels: multiple literacy, functional literacy and baseline literacy.

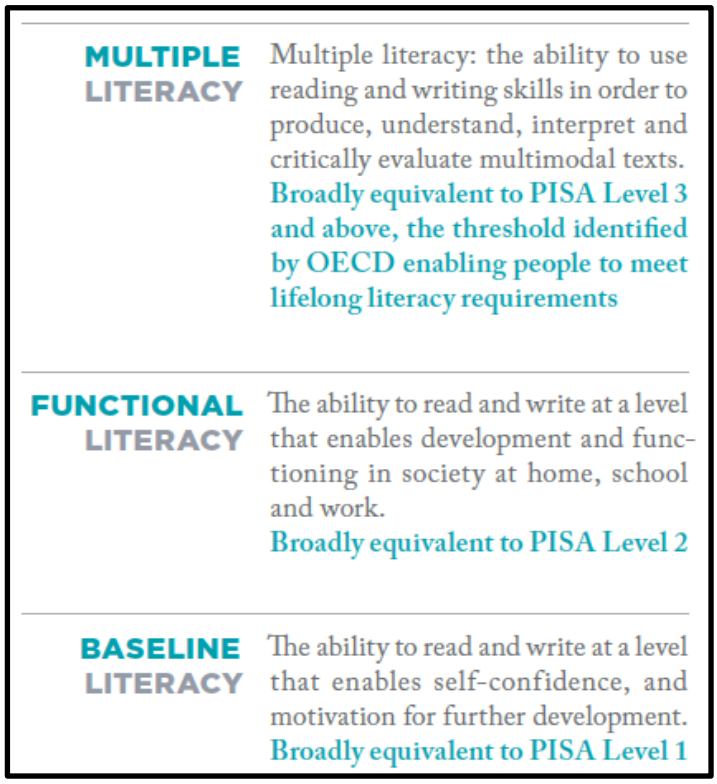

Figure 2.2: ***A multilayer approach to defining literacy***
Source: EU, High level group of experts on literacy, Final Report, 2012, p.7

Keefe and Copeland (2012) provide a different perspective on a definition of 'literacy' by focusing on the verb 'being literate' which emerges from 'literacy'. According to Keefe and Copeland (2012), to be 'literate' means that one is able to share thoughts with others in an understandable manner. In their list of ways of how thoughts can be shared they include; writing and speaking, gestures, facial expressions, images and symbols. This shows that Keefe and Copeland's (2012) views are similar to those expressed by Kress (2003) who argued that literacy is not only limited to reading and writing. In their summary Keefe and Copeland

(2012) also state that people might understand literacy in various ways and each way of thinking may affect people differently.

Roberts (1995) holds the same belief and argues that traditionally, the definition of 'literacy' can be viewed as the ability to read and write; to be literate is to have this ability and to be illiterate is not to have this ability. However Roberts (1995) continues by explaining that relating 'literacy' solely to reading and writing is not adequate as 'literacy' is a much broader concept. Therefore it can be argued that there are varied and differing views on what constitutes as 'literacy'. Whilst a number of scholars rely on a definition of literacy as being related solely to reading, writing and thinking critically (Bartlett, 2008) other scholars argue that it is a much broader concept (Kress, 2003; Roberts, 1995) which also includes the use of digital technology.

It can be argued that the terms 'literacy' and 'illiteracy' both have social implications and they seem to be related to different strands and institutions in today's society. This belief is supported by Roberts (1995) who states that 'literacy' does not have a fixed and final meaning but rather it is 'socially constructed' and 'contestable' (p.423). This assertion is also supported by Street and Lefstein (2007) who state that study of literacy leads to an 'inquiry into a broad range of social, political and ideological issues' (p.7). Moreover, in his work Manzoor (2011) combines literacy with different practices in relation to political, cultural, linguistic and socioeconomic strands and Kress (2003) also denotes that it is not possible to isolate literacy from other social and technological dimensions.

Although these scholars provide a strong argument and have stated that 'literacy' cannot be isolated from other factors, a critical overview of Maltese policies shows that this was not always recognised within the Maltese policy context. In fact as Section 2.10 will show the Maltese Core Competencies Policy (2009) provides a definition for 'literacy' and another definition for 'e-literacy'. This suggests that within the Maltese policy context, 'literacy' is viewed as different from 'e-literacy'. This further shows that social and technological dimensions are not recognised in the definition of 'literacy'. Whilst 'literacy' is defined as the ability

to communicate in Maltese and/or English and to read and write, only the definition of 'e-literacy' recognises outside factors such as technological advancements.

Although many of the scholars outlined so far in this Literature Review argue that literacy is linked to other social factors, Bartlett's (2008) views provide a different picture; namely that literacy does not have any sort of impact on society. Bartlett (2008) carried out ethnographic research in Brazil with a number of students and concluded that one should not consider literacy 'as an actor with some 'impact'' and criticises models which show that literacy has 'effects', 'consequences' and 'benefits' (p.737). Street (1993) further states that there are two main models of literacy; an autonomous and an ideological model of literacy. The autonomous model refers to literacy as a learned skill which results in rational thought and intellectual and social development while advocates of the ideological model of literacy 'view literacy practices as inextricably linked to cultural and power structures in society, and recognise the variety of cultural practices associated with reading and writing in different contexts' (Street, 1993, p.7).

Bartlett's (2008) views can be criticised on a number of levels. The fact that 'literacy' has been evolving through the years suggests that it is effected by society and therefore it must have some sort of impact on society at some level. Additionally, although the Maltese Core Competencies policy published in 2009 has distinguished between the definition of 'literacy' and 'e-literacy', the year 2015 marked a shift in local Maltese policy.

The publication of the Learning Outcomes Framework (2015) has recognised the need to include factors such as the use of digital technology in defining what 'reading' and 'writing' actually mean. This shift criticizes views such as that portrayed by Bartlett (2008) because it strongly indicates that society has some sort of impact on 'literacy' to the extent that the Ministry for Education felt the need to adapt and change the learning areas for literacy and numeracy amongst other subjects. The Learning Outcomes Framework (2015) does not only recognise technological advancements but it also takes other social changes into perspective. This policy document in fact links literacy to social learning, information

management, immediate environment, hygiene and safety practices and independent living skills.

In sum it can be argued that scholars seem to agree that 'literacy' is a very important concept in today's society and that definitions of what the term means are constantly evolving. The definitions presented in this Literature Review reveal that while we may struggle to agree on a single definition of the term, the perceived importance of literacy, as a concept, is highlighted in discussions about 'illiteracy'. However much of the literature outlined in this section reveals the assumption that literacy is about reading and writing. Whereas a number of scholars argue that literacy is the ability to read and write, recent research suggests that a more useful and meaningful concept would be that of multiple literacies and 'new' literacies (UNESCO, 2006) which will be elaborated upon in the section which follows.

2.3 Multiliteracies and 'new' literacies

Rather than attempting to refer to literacy as a single phenomenon, a number of scholars and practitioners have supported pluralist views. For example Roberts (1995) states that 'the quest for a single, all-encompassing definition of literacy is bound to fail' and it would be better if one focuses on 'multiple literacies' (p.419). In relation to this, the UNESCO Literacy Decade which was launched in 2003 adopted a new approach; that of viewing literacy not as a single term but rather 'as 'literacies' referring to multiple types and levels' (UNESCO, 2005, p.3). Bartlett (2008) holds the same view and denotes that it is inadequate to regard literacy in the singular. UNESCO (2004) recognised the notion of 'plurality of literacy' and the idea of having different types of literacy. Hannon's (2000) beliefs mirror those expressed by UNESCO (2004) and Bartlett (2008). In his work Hannon (2000) makes use of metaphors in order to describe literacy as being part of a larger concept and regards literacy as being similar to music, arguing that –

> some forms of music seem utterly different in terms of activities in many cultures. Some forms of music seem utterly different in terms of technology, conventions and purposes from other forms. Yet we do not find it necessary to assert that there is a plurality of 'musics' (p.37).

It can be argued that 'literacy' is a broad term. In fact the literature does not only discuss 'school literacy' but also different types of literacy such as computer literacy, moral literacy and even emotional literacy (Steiner, 1997). UNESCO (2006) also refers to this notion and adds terms such as information literacy, visual literacy, media literacy and scientific literacy to the list. Roberts (1995) refers to the work of others and forms a list of different types of literacy; some of which include: survival literacy, functional literacy, social literacy, cultural literacy, basic literacy and critical literacy.

Hannon (2000) tackles the comparison between the unitary and the pluralist view of literacy arguing that both views 'provide undoubted insights as well as raising conceptual difficulties' (p.30). Whilst the unitary view of literacy refers to 'literacy' as 'it' and a 'singular' concept, one reason for supporting the pluralist view of literacy is because this forms part of culture and since there are many cultures it is assumed that there are many literacies. Hannon (2000) argues that many literacies might end up being 'unsettling' for educators (p.34) and that this entrusts a theoretical concern. This is because when one starts to categorise different types of literacies under the term 'literacy' it is difficult to determine when and where to stop. The same concern is explored by Barton and Hamilton (1998) who argue that the pluralist view is 'unsure how far to go in enumerating different literacies and being unclear about distinguishing one literacy from another' (p.188). After evaluating both views Hannon (2000) draws on the conclusion that it would be best to strike a balance between the two views and proposes a search for reconciliation between the unitary and plural views of literacy.

This section has shown that 'literacy' has been redefined by many as 'new literacy' (Merchant, 2007) and that terms like 'new literacies', 'multiliteracies' and 'technoliteracy' are common terms which reflect the fact that new technologies are influencing the way we make meaning (Merchant, 2007). This section has also shown that literacy is seen in multiple ways and owning multiple definitions. The literature discussed in this section also mirrors the data gathered in this study. The data collected has in fact challenged unitary notions of 'literacy' and showed how

the use of digital technology is changing constructions of reading and writing. The research reported in this thesis has also shown that 'literacy' within this context is more than just reading and writing.

In sum, while the literature suggests that it is difficult to gain a consensus on how exactly the term 'literacy' should be defined, what is clear is that the role of technology is challenging traditional and singular constructions of literacy. This has resulted in the term 'digital literacy' which is becoming commonplace in much of the literature about what constitutes reading and writing in the digital age.

2.4 Digital literacy

As discussed above, the process of learning literacy has gone through different changes; one recent change is that many learners now frequently use digital technology and have become what is known as 'tech-savvy' (Ahmed, 2012, p.1554). What it means to be literate in the 21st Century is expanding rapidly and as the National Council of Teachers of English (2008) point out, literacy includes the ability to use technology, analyse, design and share information for different purposes. Such rapid changes are enabling people to live in what Chai and Lim (2011) describe as an 'interconnected world' (p.3) and this is bringing about the birth of new terms to the field of literacy.

Thomas (2011) for example makes use of a number of terms which have been formed from the technological revolution. A case in point is his reference to the 'digital native' – and related formulations such as the 'digital generation' and the 'net generation'' (p.i). The term 'digital natives' refers to Prensky's (2001) view of those individuals who have grown up in the digital world, who are used to receiving information fast, like to multi-task and prefer graphics (Prensky, 2001). In his book 'Deconstructing digital natives: Young people, technology and the new literacies', Thomas (2011) provides a critical engagement with this concept and refers to the 'digital native' as any 'young person who has grown up with digital technologies and the Internet as ever-present parts of their lives' (p.3). Thomas (2011) further provides a critical analysis of this term and distinguishes between 'technoevangelists, technoromantics or enlightment thinkers' and

'technophobes, antimodernists or luddites' (p.1). Thomas argues that even though the term 'digital native' has been used for over a decade this term still 'causes disdain as well as fervent acceptance' (p.3).

Whilst describing students as 'digital natives' Prensky (2005) believes that today's students are 'empowered' in many ways and their lives are surrounded by digital technological devices, claiming that they are living 'e-lives' (Prensky, 2004). Other key words which are associated with today's students who are considered as 'digital natives' are, 'tech-savvy' (Ahmed, 2012), 'screenagers' (Rushkof, 2006), 'digikids' (Marsh, 2005) 'clickerati' (Harel-Caperton, 2003) and 'cyberkids' (Holloway and Valentine, 2003).

These terms and Prensky's (2005) notion of the 'digital native' suggest generational definitions. Although Prensky (2005) argues that competence with digital technology is generational others contrast this view. Cody, Dunn, Hoppin and Wendt (2009) have shown how their participants, with the average age of eighty years, have been trained and were able to surf the Internet, send e-mails and communicate with others online even though the participants were not born in the digital age. Wallace (2002) has also referred to the idea of economic and social differences in her work whilst Selwyn's (2004) study has showed how having children as relatives helps 'silver surfers' use digital technology. Thomas (2011) has also tackled this view and argued that 'in adopting an international perspective the limitations of the generational argument are immediately apparent' (p.4) whilst he further suggests that none of the contributors to his book accept 'the undifferentiated "generational" viewpoint based on age alone' (p.5).

With the drastic technological changes, the term 'literacy' has also been expanded and adapted and is including various forms such as e-literacy, media literacy, information literacy, lateral literacy, reproduction literacy, visual literacy and digital literacy. According to Merchant (2007) 'digital literacy' refers to writing and reading with new technologies, stating that 'the future of writing is closely interwoven with the future of digital technology' (p.126). In relation to this Ng (2012) refers to digital literacy as 'the multiplicity of literacies associated with the use of digital technologies' (p.1066).

'The National Curriculum Framework' (2012) for Malta explores the importance of 'digital literacy' and describes it as the experience when an individual communicates and presents information through digital technologies. Markham's views (2004) refer to digital literacy as a very broad term for a set of social practices which are combined with contemporary 'ways of being'. This idea is linked to Jones-Kavalier and Flannigan's (2006) definition of digital literacy which for them, represents a person's ability to effectively carry out tasks in a digital environment. They continue to argue that 'digital' refers to 'information represented in numeric form and primarily for use by a computer' whilst 'literacy' refers to 'the ability to read and interpret media (text, sound, images), to reproduce data and images through digital manipulation, and to evaluate and apply new knowledge gained from digital environments' (p.9).

The definitions of the term 'digital literacy' which were explored so far all refer to digital literacy as a skill and a concept which is related to the use of technology. However a number of scholars such as Eshet-Alkalai (2004) elaborated even further and suggested that there are five types of literacies that fall under the umbrella term 'digital literacy'. He classifies these types as: reproduction literacy, photo-visual literacy, information literacy, branching literacy and socio-emotional literacy. Jones-Kavalier and Flannigan (2006) also believe that 'digital literacy' cannot be understood in isolation. They argue that 'digital' and 'visual' literacy are terms which often overlap, interact and are very similar in meaning.

21st Century students are exposed to various apps like WhatsApp, Viber, Instagram and Snapchat which can be considered as a visual form of communication which is created and transmitted using digital technologies. This further suggests that there is a strong relationship between 'digital literacy' and 'visual literacy' in the 21st Century classroom and this was also confirmed in the results of this study. It was also noted that although the literature seems to correlate a strong bond between 'digital literacy' and 'visual literacy', speech seems to be given less importance and focus in the literature.

Ng (2015) also focused on the concept of 'digital literacy' and used Eshet-Alkalai's (2004) as well as the New London Group's (1996) multi-literacies concept to

devise a digital literacy model which is shown in Figure 2.3. Through Figure 2.3 Ng (2015) shows that digital literacy is segmented into three main dimensions which can be listed as, the technical, the cognitive and the social-emotional strands.

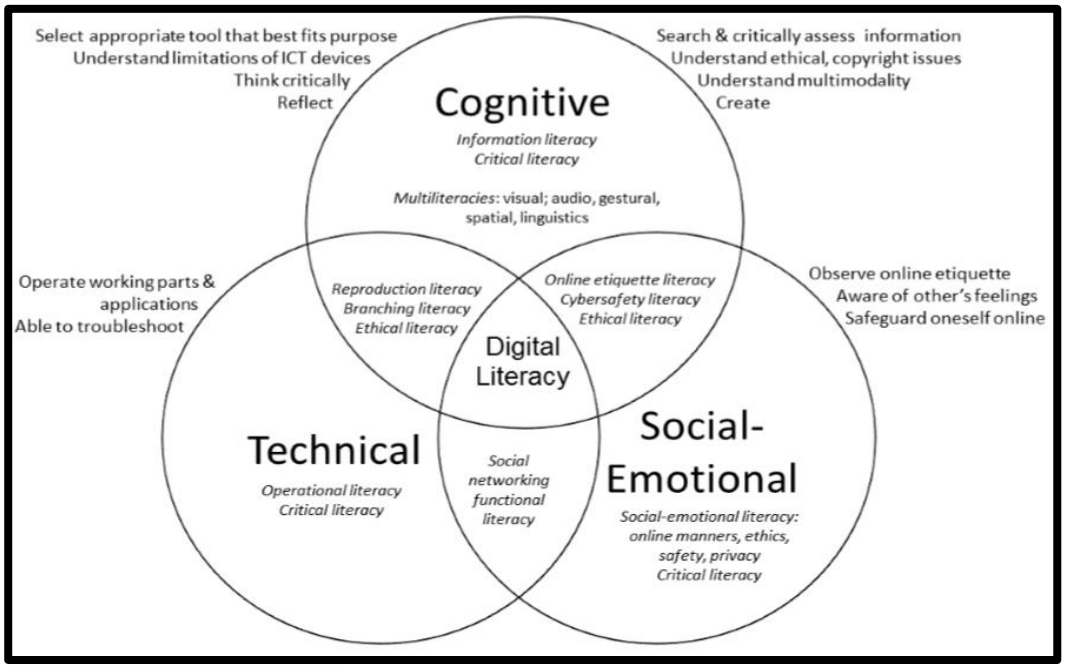

Figure 2.3: ***Digital literacy framework***
Source: Ng, personal communication, August 15, 2016

The 'technical' dimension of being digitally literate 'broadly means possessing the technical and operational skills to use ICT for learning and in everyday activities' (Ng, 2012, p.1067). Ng (2012) points out that this refers to one's capability of using technological devices and to be able to operate technologies adequately. The 'cognitive dimension' refers to one's capability of thinking critically and evaluating whilst the 'social-emotional dimension' of digital literacy refers to ones' ability 'to use the Internet responsibly for communicating, socializing and learning' (p.1068).

This section has shown that since the world is constantly changing, defining the term 'digital literacy' is not straight-forward because 'nothing could be more obvious than the ways in which writing is changing' (Merchant, 2007, p.126). Furthermore literature shows that the future of reading and writing is closely linked with the future and progress of digital technology (Merchant, 2007). It can be argued that although a number of scholars have identified a definition of 'digital literacy' (Merchant, 2007; Jones-Kavalier and Flannigan, 2006) other scholars

believe that the nature of reading and writing of text is meant to be changed and adapted through time as new technologies are introduced. This aligns with my findings which will be discussed later in the thesis.

Although many have attempted to define 'digital literacy' it can be further argued that a number of scholars believe that it cannot be understood in isolation and that it forms part of, and is linked to, other types of literacy such as 'multimodal literacy'. 'Multimodal literacy' has been related to 'digital literacy' and has been first proposed by Kress and Jewitt (2003). Kress and Jewitt (2003) state that this type of literacy focuses on the contribution of semiotic resources such as gestures and images which are further employed to various modalities such as aural and visual.

'Multimodal literacy' refers to the integration of these two strands which in turn form a 'coherent multimodal text' (Kress and Jewitt, 2003). Walsh (2010) refers to 'multimodal literacy' as the type of literacy that is 'needed in contemporary times for reading, viewing, responding to and producing multimodal and digital texts' (p.211). Furthermore Walsh (2010) relates multimodal literacy to digital literacy and further argues that the definitions of language and literacy have changed because digital technologies have changed social communication practices. This was also evident from the study presented in this thesis.

More recently Rowsell (2013) refers to the definition of a 'mode' in her work and defines this as 'a unit of expression and representation'. She further argues that 'as long as a person and community treats something as able to express and represent meanings, then it meets the criteria of a representational and communicational mode, unit or element' (p.3). Like Kress and Jewitt (2003), Rowsell (2013) argues that the term 'mode' has been extended and also includes 'non-verbal elements' (p.4). Rowsell's (2013) argument however is more elaborated as she argues that although messages rely on one mode or a combination of modes, 'the particular meaning that is made is always culturally shaped, and materially and socially situated' (p.4). Anderson (2013) shows agreement with the latter in her work whereas she argues that 'multimodality has gained prevalence not simply because of these changes in the communication landscape, however,

but also because of the social turn of the past thirty years and ensuing theoretical and methodological perspectives on literacy, discourse, and social semiotics' (p.277).

It can be argued that due to such advancements, change is also being evidenced in today's classrooms. The studies discussed in this section all seem to agree that these changes are present and are therefore affecting the way reading and writing are being taught and learned in schools. One of the main aims behind this study was to explore what teachers' and students' views on the role of technology in reading and writing in the classroom are. In order to have a better understanding of this, the following section will focus on what the literature presents in relation to the learning and teaching of reading and writing in the digital age.

2.5 Teaching and learning to read and write in the digital age

Given the above discussion on how 'literacy' is defined, the literature seems to agree that new technologies are shaping 'new literacies' and are bringing opportunities for teachers to teach reading and writing in 'more diverse and participatory contexts' (National Council of Teachers of English, 2008, p.2). More recently, research in the United States has showed that 'a successful digital conversion for classrooms, districts, and states is not determined by the technology, but by how technology enables teaching and learning' (McKnight, O'Malley, Ruzic, Horsley, Franey and Bassett, 2016, p.194). Musti-Rao, Cartledge, Bennett and Council (2015) have also agreed that due to several advances in the digital world, technology is becoming more accessible in classrooms. McKnight et al (2016) have further argued that 'access to technology is an important first step in the digital conversion of school systems; however, for the conversion to be successful, it is critical to move the focus beyond the technology itself, to how technology enables teaching and learning' (p.194).

This view has also been noted by Zammit (2004) who focussing specifically on Malta, stated that:

> A transformation has been happening around us with the ubiquity of ICT, it is natural that this transformation must be reflected in the way we teach and the way we learn.... Schools have gone through a process by which in a relatively short time-span they have been equipped with an ICT infrastructure (Zammit, 2004, p.1).

As Zammit (2004) argues, information and communication technologies are changing both teaching and learning in the 21st Century and schools are now incorporating technology in their systems (McKnight et al, 2006). Furthermore we are living in a time of change in which information technology is affecting the way society functions and lives (Castells, 2004). This notion was earlier expressed by Reinking, McKenna, Labbo and Kieffer (1998) who presented their perspectives on how technological developments are changing foundations of literacy. This notion of 'change' in defining 'literacy' has been explored in the literature by many (Nutbrown, Clough, Levy, Little, Bishop, Lamb, Yamada-Rice, 2016; Cook-Gumperz, 2006). Cook-Gumperz (2006) has argued that importance should not only be given the impact of digital technologies but it is also important to identify how such advancements are influencing constructions of reading and writing. Thomas (2011) more recently, suggested that technology is changing the foundations of literacy and asks two reflective questions which need consideration when focusing on the teaching and learning of text in the 21st Century:

> What are the key literacies and competencies for the 21st Century, and how can we develop an education system that is adjusted to face these challenges of competence development for the future? Also, what do young people really know about media, and what implications does this have for learning in educational settings? (p.106)

A number of researchers and practitioners agree that technology has brought drastic changes in education (Chai and Lim, 2011; Kolikant, 2010; Merchant, 2007) and therefore it is important for educators to be aware of the technological experiences students have had (Thomas, 2011). According to Jones-Kavalier and Flannigan (2006) a common scenario in a 21st Century classroom is a classroom filled with 'digitally-literate students' who are taught by 'linear-thinking,

technologically stymied, instructors' (p.4). Teachers need to ensure that technological resources are used in the best interest of the students since learning takes place when learners participate in activities which are personally relevant. (Betcher and Lee, 2011). Teachers are also expected to be 'mediators' and 'knowledge brokers' in order to provide students with guidance and assistance (Betcher and Lee, 2011).

In order to ensure positive learning with the use of information technologies, a number of scholars have argued that one must consider the teacher's own level of ICT use. Prensky (2001) for example has referred to this by claiming that teachers or 'digital immigrant instructors' are struggling to teach students because students speak a different language. He goes on to argue that this is because students who are learning to read and write in the digital age are accustomed to receiving information very quickly (Thomas, 2011) and are learning in different ways than their teachers, due to several technological advancements along the years. In relation to this Thomas (2011) argued that today's learners prefer graphics and images before their printed text rather than the other way round. Similar to Prensky's (2001) ideology, Chai and Lim (2011) have also denoted that one must consider the teacher's own level of confidence in using digital technology in class. They argued that many teachers are using information and communication technology in traditional settings and some are even doubtful about the positive effects ICT has on the teaching and learning of reading and writing.

Some scholars hold the view that teachers' personal competences in ICT affects their teaching of reading and writing in class (Edwards and Bruce, 2000). However this view is not supported by Kajder (2005) who argued that teachers who use the computer and Internet browsers at home do not necessarily bring that knowledge into the classroom. Two thirds of the teachers in Kajder's (2005) study reported that they felt unprepared to use technology in teaching, even though they were ICT competent. Edwards and Bruce (2000) also believe that the teacher's own ICT competences do not necessarily affect instruction because according to them, technology is successfully used when the teacher makes use of critical reflection

and therefore teachers with few technological skills might still provide a good level of instruction.

Chai and Lim (2011) hold a more neutral standpoint and argue that integrating ICT into teaching and learning practices is 'a complex and messy task' (p.6). According to Chai and Lim (2011) teachers who teach in the digital age are requested to use ICT competently, have a sense of one's developing identity and the right pedagogical ideas. A similar notion is expressed by Betcher and Lee (2011) who believe that when teachers reflect and start thinking about 'e-teaching', they normally go through three phases: 'doing old things in old ways, doing old things but in new ways and doing new things in new ways' (p.15). Similar to this, Glover and Miller (2001) also identified three types of categories of teachers; the *'missioners',* the *'tentatives'* and the *'luddites'.* The 'missioners' are those teachers who understand the beneficial use of technology and use this in practical ways. The 'tentatives' refer to those teachers who are willing to try technological resources but with some difficulties whilst the 'luddites' are those teachers who prefer to teach in a traditional manner and refuse to amalgamate technological resources with their teaching.

Betcher and Lee (2011) also refer to three types of teachers. The 'early adopters' are described as those who are normally highly motivated to start using any new technology. Betcher and Lee (2011) regard these practitioners as seeing the positive impact of digital technologies and fully prepared to use it because of the benefits it brings. The number of teachers who fall in this group is normally smaller in comparison with those who fall in the second group of teachers which Betcher and Lee (2011) describe as 'interested but a bit wary' (p.15). These teachers are said to believe in the benefits of the technology but find some difficulties in using it on an everyday basis, finding it difficult to incorporate yet another concept into the curriculum. Although these practitioners are described as being more difficult to work with compared to the 'early adopters', once they understand the full benefits of the technology they tend to work with it in a very positive manner (Betcher and Lee, 2011). Betcher and Lee (2011) refer to the last group of teachers who are less excited about technology and tend to focus on the

negative reasons as to why technology might not work and possibly even regard it as a waste of time.

Whilst the literature presented here has suggested that teachers fall in three different groups this view can be criticised. Such a view focuses on the teacher's use of technology but does not acknowledge outside factors which might impact the teacher's behaviour. The literature does not refer to teachers whose enthusiasm wears off due to technological faults such as projectors and laptops which need replacements. Therefore a wise approach would be that of understanding teachers' behaviours and giving the necessary support in order for students to make the best possible use of technological devices in the classroom. Regardless of the teachers' level of ICT or which group teachers fit in, most researchers agree that completing ICT courses is not enough unless teachers practice the skills learned (Slay, Sieborger and Hodgkinson-William, 2008). Research also seems to agree that today's students are entering into today's schools with a good level of ICT knowledge and skills.

Today's students are described as 'natives to cyberspace' and 'digitally savvy' (Jones-Kavalier and Flannigan, 2006, p.9). Ahmed (2012, p.1554) goes on to assert that 21st Century learners 'respect knowledge, wisdom and human experience less and less' and are relying more on the modern technology which surrounds them. Since digital technology is constantly changing it is also influencing the way reading and writing are taught and 'new media literacy technical skills catapult traditional learning methods into orbit' (Jones-Kavalier and Flannigan, 2006, p.9). This change brings about reflection on whether the use of digital technology - in teaching and learning of reading and writing – is encouraging students to learn more. A number of researchers like Kolikant (2010) and Twenge (2006) have carried out studies in order to find out whether 'digital natives' are actually learning more than students of previous generations.

Answering this question is a difficult task as research shows varying outcomes. For example in an interview based study of 25 students, Kolikant (2010) found that the majority of students use technological devices at school but they believed that their generation was not as academically able as the 'pre-ICT generation'. Twenge

(2006) also tackles this notion and argues that 'Generation Me'- which refers to all the people born after 1970 – is less motivated to learn compared to the 'pre-ICT generation'. According to Twenge (2006) the 'modern' generation of learners read fewer books and tend to avoid using textbooks when compared to students who have learned in more traditional settings without any form of technology. Twenge's (2006) study also showed that students were becoming less 'self-reliant' when compared to previous generations of learners (p.1385).

A number of scholars and researchers in this field have presented a different scenario and have supported opposing views (Gee, 2004; Goldberg, Russell and Cook, 2003). A study conducted by The National Council of Teachers of English (2008) for example has shown that digital technology promotes writing and interaction. Goldberg, Russell and Cook (2003) also found that students who use digital technology for writing produce longer and better writing tasks and are more motivated to write compared with their peers. Gee (2004) also declared that students in the 21st Century are better equipped for late capitalism when compared to those who were taught in a more traditional manner and without technological resources.

Whilst the research outlined so far presents a mixed picture regarding whether 21st Century learners are better learners than previous generations, other studies show neutral outcomes. Martin (2014) for example argues that computers do little in terms of learning. Merchant (2007) also holds a neutral perspective and denotes that 'whether using computers can improve writing, or for that matter reading, is a notoriously difficult research question to answer and one that only really makes sense in a context in which there is real choice and genuine scope for comparison' (p.120).

The literature presented here suggests a comparison between 'digital natives' and 'older' generations. Yet the literature fails to acknowledge the fact that in the near future, the divide between 'digital natives' and 'digital immigrants' will be diminished. Schools in Malta are being equipped with the latest forms of technologies and teachers who are not 'digital natives' are given training and support through in-service courses. The point being made here is that rather than

distinguishing between ‘digital natives’ and ‘older’ generations it would be wiser to invest in teacher training for educators who are born in the pre-technology era. Additionally, one must also keep in mind that this ‘era’ will fade out in the near future and all citizens will be considered as ‘digital natives’.

On the basis of my critical review of the literature it may be argued that although this section has shown that research tends to refer to the teacher’s own level of technological capabilities, emphasis must be on the pedagogical possibilities rather than the technological capabilities and digital technology on its own does not change pedagogy (Higgins, 2010). Teachers’ professional development should focus strongly on pedagogical as well as technological skills in order for technologies to create more dynamic classrooms through interactive teaching and learning (Cogill, 2010). Teachers need to be aware of the way students are learning in order to meet their pedagogical goals (Thomas, 2011). Although technology is important to teach literacy in the new century, other dimensions of learning need to be taken into consideration. Clearly there is a need for teachers to be ICT literate and teachers need to be experts in their fields of teaching and more importantly facilitators of students’ learning (Ahmed, 2012).

The literature presented in this section seems to agree that emphasis should be on the pedagogical skills rather than the technological capabilities (Bartolo, 2014). In order to understand what these pedagogical possibilities are, we need to understand what reading and writing in the digital age is and this justifies the importance of my study. Additionally, this section has showed that constructions of literacy are changing because of digital technologies and one of the research questions of this study specifically asks ‘What are the students’ and teachers’ views on the role of technology in the classroom?’ In order to have a better understanding of this the following section will address the relationship between the use of digital technology and reading and writing.

2.6 Digital technology and its link to reading and writing

Literature seems to agree that learners are being exposed to a number of technological devices and technology in the classroom has become less expensive

and easier to use (Lim, Pellett and Pellet, 2009). A number of researchers like Bergen (2000) also hold the view that advancements in technology can bring exciting learning opportunities for students. As the previous section has shown learning in the 21st Century has become 'technologically oriented' and schools need to catch up with technology in order to ensure that they are helping their students prepare themselves to be successful (Morgan, 2011).

The same is argued by Barone and Wright (2009) who believe that it is imperative that students are prepared for the new digital literacies. On top of this, Morgan (2011) states that this can be achieved by allowing students to use technological devices such as handheld computers within the classroom setting. Through this manner students will be transferring their knowledge and skills of using technology in the classroom context or learning purposes.

Various classrooms around the world are in fact making use of different types of technological devices and teachers are also using wireless technological devices in their teaching with the aim of improving learning (Kim, Mims and Holmes, 2005). Churchill and Churchill (2008) provide a list of technological devices which they consider to be 'wireless technological devices' which can be used within the classroom context. They include; smart phones, iPods, personal digital assistants and cameras; all of which Morgan (2011) argues are affordable, portable and practical for classroom use.

To date Maltese students have not made regular use of any of the technological devices listed by Churchill and Churchill (2008). As the last section of this chapter will show however all Maltese classrooms are equipped with interactive whiteboards and projectors. Every Maltese primary classroom also has a minimum number of four computers in each class, one of which is connected to a printer. Furthermore all primary school teachers, kindergarten assistants and learning support assistants in state schools were given a new laptop at some point throughout the year of 2016.

A common feature which technological devices have is the use of 'multimedia'. Morgan (2011) refers to multimedia tools as those which provide audio, video and

Internet access and argues that modern technological devices are allowing text to be presented alongside audio, visual and interactive tools. A number of researchers have argued that students enjoy using technology in the classroom due to its multimedia presentation (Biro, 2011; Jewitt, 2002) whilst others regard the use of multimedia as a major advantage of technology use (Yanez and Coyle, 2010; Slay et al., 2008).

Throughout Slay et al.'s (2008) study, practitioners incorporated various types of multimedia sources in their teaching such as; online sources, websites, presentations and static images. Students who were interviewed in Slay et al.'s study (2008) provided examples how they believed multimedia helped them learn more:

> Teacher A revealed that several of her Grade 6 learners are not able to read, but when the whole class was going through the online story books she said: '*I could see that they were trying to read along with the story. And afterwards when I tested them to see if they could read a line at least, I could see that they had improved'* (p.1334).

Yanez and Coyle (2010) agree that students like the visual and audio aspect of tablets and the touch screen along with the multimedia presentation. This was shown through a number of studies including a small-scale study carried out in an English language classroom in Spain (Yanez and Coyle, 2010) where eight year old students were asked about the ways in which they and their teacher used interactive whiteboards. Common themes in the children's responses were categorised into four main categories:

> 1. The 'game-like' element of the IWB
> 2. The multi-sensorial properties and multimodal activities of the IWB as an aid to facilitate comprehension and learning
> 3. The children's desire to use the IWB more often
> 4. The children's awareness of technological problems (p.448).

The multimedia concept of the interactive whiteboard was a common theme for students who also explained that they considered the interactive whiteboard to

enhance learning through fun whilst making lessons more enjoyable. These feelings were expressed through the children's direct quotes "*I like it because we can play lots of games and we can learn at the same time", "I like the multiplication games because I can learn the times tables very easily... if we did not have the IWB it would be boring and harder to learn" "And you can't do a lot of games on a book like that (text book)... you can do it interactive (referring to the IWB)* (p.448).

Lim-Fong and Robins (2010) also elaborated on multimedia features in their study and they refered to the connection between handheld devices and video games stating that students who are shy to face the classroom are now volunteering to use technology and showcase their understanding. According to Lim-Fong and Robins (2010) through the use of technological devices the students feel less discouraged when they make a mistake and surmise that 'this confidence may come from experience with computer and video games that requires them to try again and again until they get it right' (p.230).

In a study on filmmaking Theodosakis (2001) stated that digital video technology, which can be presented through different modes, is an important tool which stimulates students' learning and helps learners acquire new skills such as critical thinking, decision making, communication and research skills. Lim et al. (2009) support this view and argue that through video integration in the classroom learners learn to collaborate and acquire skills such as problem solving and knowledge building. This shows that multimedia functions are extremely popular with students and in turn students are benefiting through its use.

This multimodality can be considered as a prime advantage because it caters for different learning styles (Yanez and Coyle, 2010). Furthermore; 'integrating elements of text, graphics, sound, video, and the capability of user to physically interact with the objects on the screen, has offered an innovative approach to teaching and learning interactively' (Lim-Fong and Robins, 2010, p.226). Visual images are also claimed to stimulate children's memory (Livingstone, 2009; Burden, 2002; Kress, 1998).

As Kress (1998) argues; ‘the exponential expansion of the potentials of electronic technologies will entrench visual modes of communication as a rival to language in many domains of public life’ (p.55). This concept was also explored by Burden (2002) when he stated that students remember more when they visualise images. This shows that multimedia sources such as video-clips and presentations also help students to understand concepts ‘at a deeper level’ (Lim-Fong and Robins, 2010, p.230). Morgan’s (2011) study similarly argues that multimedia also helps students learn vocabulary since the technology can provide images along with definition of new words, thus making it more practical and easy for young students to learn new words in class.

Lim-Fong and Robins (2010) argue that Livingstone teachers have found that using multimedia such as video clips to extend ideas can increase students’ attention span and comprehension because students can make a connection to the material. The use of multimedia has also proven to increase student engagement and the teachers interviewed in Lim-Fong and Robins’ (2010) study also explained that they have observed more on-task behaviour as students attend to instructions better. Studies have found that visual representation and multimedia motivate students to learn and focus more and can be considered as a way which improves student learning (Fiorentino, 2004).

In spite of this, this ideology has been challenged with some studies tackling the disadvantages which multimedia technological resources might entail. Twiner (2010) for example refers to the ‘dangers of an assumption that technology will drive the lesson rather than the learning’ (p.43). This argument is further consolidated by Cutrim Schmid’s (2008) belief that ‘since the technology allows a seamless access to multimedia resources, there is a potential danger of using the technology mainly to give lessons a crisp pace, instead of focusing on making the best pedagogical use of these resources’ (p.1566) Smith, Higgins, Wall and Miller (2005) also share their concern that the ‘novelty value’ of technological devices might ‘wear off’ as students become familiar to the multimedia features of electronic devices.

Morgan (2011) has also presented a number of disadvantages in relation to multimedia arguing that 21st Century learners still need to interact with the teacher when using technology and therefore the use of multimedia on its own would not be successful without constant human interaction input. He later adjusted this view on the use of Skype for projects in schools arguing that a student who was struggling with the reading of a book kept trying to read it because he knew, and had spoken to the author through the Skype conversation (Morgan, 2013). Furthermore it was also noted that Skype conversations with authors motivated the students to read more challenging books.

The literature seems to present a mixed picture about the use of multimedia in class in relation to reading and writing. A number of scholars (Lim-Fong and Robins, 2010; Theodosakis, 2001) believe that multimedia leads to positive attributes and motivates students to focus more on their work. This Literature Review has shown however that a number of researchers do not support such a positive view and criticise multimedia for distracting the pupils (Baya'a and Daher, 2009).

Although this section focused on the use of interactive whiteboards and tablets since these are mainly used in Malta, Lacina (2008) and Patten and Craig (2007) have focused their research on the effects of iPods in classrooms. Through Lacina's (2008) study it was shown that students enjoyed using iPods as they found them to be motivating and engaging. Patten and Craig's (2007) findings were very similar to those presented by Lacina (2008) since the study showed that 'the iPod provides a tool for engagement' (p.74). In spite of this finding Patten and Craig (2007) have also argued that their research showed that in itself the iPod did not lead to higher test scores.

Further international research has focused on other handheld technological devices which hold multimedia features and are used in the classroom context. Baya and Daher (2009) for example conducted an experiment and investigated the use of mobile phones in a classroom setting to teach mathematics arguing that although the use of technology and the features of multimedia helped students with their learning they also have the potential to distract students. This was considered as one of the main drawbacks of using handheld multimedia devices.

This section has further demonstrated that constructions of literacy are changing because of digital technology. Although the literature outlined so far agrees on this, there is lack of research which seeks to understand what reading and writing actually are now. However before addressing the research question; 'what is reading and writing in the digital age?' it is important to see what the literature has said about the advantages and disadvantages of using technology in the classroom.

2.7 Reported advantages and disadvantages of using technology in the classroom

Technological devices such as computers, mobile phones, tablets, iPods and the interactive whiteboard can be used in a variety of ways by different educators (Betcher and Lee, 2011) and it can also be argued that the use of such technological devices within the classroom setting might have a number of benefits as well as drawbacks. One may argue that not everyone holds positive views about the use of digital technology whilst some have argued that technology is not quite refined for the classroom setting (Slay et al., 2008).

For example, it has been argued that the use of interactive whiteboards in the classroom might encourage 'the "sage on the stage" mentality of teaching' through which the teacher teaches from the front of the classroom whilst the students are passive listeners (Betcher and Lee, 2011, p.7). Merchant (2007) also argues that the use of interactive whiteboards 'reinstate the traditional "face the front" classroom geography' (p.123). A number of practitioners have also referred to the use of the interactive whiteboard as a 'gimmick'. One of the interviewed teachers in Slay et al.'s (2008) study believed that although interactive whiteboards increase the content of the lesson and it encourages an element of interactivity it still could be seen as a 'gimmick' in trying to entice students to participate:

> I do see a benefit in it (eBeam). In that there seems to be another element of interactivity that is added... it really does encourage activity with the children. OK, maybe it's a bit of a gimmick...but it does increase the interactive content of the lesson (p.1335).

Other disadvantages which were outlined by Slay et al.'s (2008) study, who collected data directly from teachers and students, was the teachers' lack of technological skills. Using teachers' journals Slay et al. (2008) refer to teachers' comments about their colleagues who are not computer literate. The teachers in this study felt so discouraged by their failure that they gave up on using any form of technology in the classroom setting. Students in their study also showed concern and explained that in their opinion if a teacher does not know how to use technology but tries to include it in his or her teaching; 'it can actually 'detract from the learning experience' (p.1333).

Practitioners who are not ICT competent and refuse to use technology might also regard technology as 'a waste of time'. This was argued by one of the teachers interviewed in Betcher and Lee's (2011) study who stated that technology is 'a waste of time, that they could buy a whole lot of textbooks for the same amount of money, and that they will never use the technology' (Betcher and Lee, 2011, p.15). Wall, Higgins and Smith (2005) also report student frustration when teachers are not ICT competent and when they encounter technical problems. Slay et al. (2008) added associated cost and technical difficulties to the list of disadvantages of the use of technology in the classroom.

Brody (2015) in her article 'Screen addiction is taking a toll on children' has focused on the physical disadvantages of technology use. According to Brody (2015) if children use handheld devices for a long time on a daily basis they can develop pain in their wrists, fingers, neck and back. According to Brody (2015) children have the tendency to 'slump' over their devices. Brody (2015) also states that the overuse of handheld devices narrows the blood vessels in the eyes.

Other observers and researchers have raised concerns that technological devices in the classroom might be misused and a lot of money would be wasted (Miller and Glover, 2010). Technological devices in the classrooms are renowned for their use of direct interactivity with the students. However Miller and Glover (2010) raise their concern that if teachers choose to substitute technological devices with textbooks the optimum use of the technology would be inhibited. Further to this Slay et al. (2008) also presented this argument and stated that 'to keep up with the

times, teaching and learning should evolve to include whatever technologies learners relate to' (p.1334).

It is clear that many writers have shown considerable scepticism with regard to the value of technology in class. Adams (2007) for example argues that technology 'promotes' cheating and other bad habits such as cyber bullying and through the use of the Internet students might view inappropriate material which in turn can distract the students from being academically engaged. It can be argued however that such views have been criticised and a number of scholars have also argued that the advantages of technology use in class outweigh the disadvantages. A prime advantage of technological resources in the classroom for example is that today's students love using technology. This was expressed by one teacher in Slay et al.'s (2008) study who argued that:

> It's not the same. In fact the kids are more interested in using it (eBeam). The moment they see something new, they are more interested in using it. The moment you say the class will be held in the (other teacher's) classroom, they know we are going to be using the eBeam so they'll all rush in. (p.1334).

In addition, Miller and Glover (2010) state that technology in the classroom is a resource which promotes flexibility and versatility and tackle the following points which can be regarded as advantages when using technological modes;

- promotes whole class teaching,
- is a resource which demonstrates and displays concepts in a visual manner and meets the needs of a wide range of students due to its multimedia approach,
- captures and sustains student attention,
- utilizes a variety of approaches; such as written text and diagrams (p.4).

Similarly other benefits portrayed by teachers as well as students themselves include; increased learning and understanding, the promotion of discussion and facilitation of monitoring, higher levels of student concentration, attainment and active learning and increased enjoyment and motivation (Draper and Brown, 2004). Another advantage which was mentioned by one of the teachers in Slay et

al.'s (2008) research was that digital technologies are more practical for an individual to write answers on whilst Glover and Miller (2001) said that digital technological devices serve as a learning resource which supports different needs and learning styles.

Some of the advantages outlined so far have also been supported by Churchill and Churchill (2008) who conducted a study on the use of palmtop computers (PDA) in the classroom; a personal organizer with Internet access. Churchill and Churchill (2008) identified five affordances of PDA technology; 'as a multimedia-access tool, connectivity tool, capture tool, representational tool and analytical tool' (p.1439). Through these affordances students learn to ask questions and participate in discussions, they learn to collect visual data through the use of the camera and the technology also helps the students represent their work (Churchill and Churchill, 2008).

Another advantage, not often mentioned in the literature, is that handheld technologies minimise the use of paper (Morgan, 2011) because students can carry out their work on the device and upload it or email it to the teacher. The teacher can then correct and return the students' work in the same manner. Morgan (2011) refers to 'green technology' to show how digital technology is contributing to the environment. Soloway (2000) builds on Morgan's (2011) idea and states that technology helps teachers and students share information in a fast manner and through this method students can go back, edit and revise their work as many times as needed. The notion of 'green technology' has also been supported by Carabott (2015) within the Maltese context, she argues that the One Tablet per Child Pilot Project found that the weight of school bags which varied between four to six kilos could be halved if printed material such as books and textbooks are to be digitized on the tablet, thus bringing health benefits.

Harris (2008) focused on the iPhone and the iPod Touch and presented a mixed picture on both the benefits and drawbacks of using these devices in the classroom setting. He argued that for many schools the use of an iPod Touch may be beneficial since it does not have a camera. This issue has been debated considerably in the Research Report on the Pilot Study of the One Tablet per Child

Project in Malta (2015) since a number of teachers interviewed in the study were also sceptical about the use of the camera function in the classroom. Other teachers in the study however spoke highly about it and explained that the camera function helped the learners learn to present information in a photo format. Some of the teachers also argued that the camera function helped students take screenshots of their work and students could in turn upload their own work in an easy manner.

Harris (2008) refers to some advantages when using a device with a camera. Through the use of the iPhone Harris (2008) argues that students can change handwritten notes to typed text. Further to the list of benefits Harris (2008) argues that the iPhone can be used as a newsletter, a homework helper, a hall pass and also a handbook. Harris (2008) believes that digital technology is an excellent way through which students can share files and documents, communicate and interact through games - features which cannot be easily transmitted without the technology in the classroom. Although through his work Harris (2008) speaks highly of the use of iPhones and the iPod touch he criticises the use of 'one laptop per student' and states that its use has not worked well in schools and 'by the time concerned administrations are done locking down the machines, they're little more than electric pencils - with really horrible battery life. So I say we turn from this idea and go for a plan that can really work- an iPhone, or at least an iPod Touch, for every student' (p.22).

Given the affordances of the devices listed in this section, this raises questions about what literacy, reading and writing actually are. Whilst this literature has until now examined the practical advantages of digital technology – such as easier access and time management – it is also raising pedagogical questions about what reading and writing have become. It further probes the question: 'how do teachers now teach reading and writing as a consequence of these affordances?'

This section has shown that whilst some support the use of digital technology in class others have focused on the drawbacks and state that digital technology still presents a 'mixed picture' (Thomas and Cutrim Schmid, 2010). On the one hand the use of technological devices such as tablets and interactive whiteboards seems to improve learning practices and student focus. Furthermore some have argued

that technology leads students to learn more since it enables students to 'learn by doing' rather than learning by listening (McNeely, 2005). This notion was also outlined in Lim et al.'s (2009) study about the use of digital video technology in the classroom arguing that digital technology helps students apply theory to practice.

On the other hand a number of studies show that the use of digital technology might distract students from the actual learning and might also enhance the centrality of the teacher and impedes student control (Slay et al., 2008; Gray Hagger-Vaughan, Pilkington, and Tomkins, 2007). Schacther (2009) similarly explained that a school in Texas confiscated mobile phones because they distracted students from learning.

In addition to this, Morgan (2011) has argued that critics of technology state that not only does it distract pupils from learning but students might also become addicted to 'electronic stimulation' (p.141). The notion of 'screen addiction' has also been addressed by Brody (2015) who argues that although 'internet addiction' is not considered as a clinical diagnosis, American youths are 'plugged in' but 'tuned out' of 'live'. Brody (2015) also mentioned that computers, tablets and smartphones are gradually taking over and are constantly being used as 'babysitters'.

Furthermore although it has been argued that handheld computing devices increase communication and sharing of information (Ray, 2002) certain communication skills cannot be acquired through technology on its own. Hall and Hall (2010) argue that when it comes to communication, students need to learn how to communicate with others through facial expressions, tone of voice and body gestures and this might not always be achieved through the use of technology on its own.

Therefore it can be argued that although the use of technological devices might provoke a number of advantages in teaching, the human interaction between students and teachers is also very important and needs to be given consideration. Many have in fact argued that technology is 'a poor substitute for personal

interaction' (Brody, 2015). Brody (2015) substantiates her argument by referring to two boys aged 10 and 13 who portrayed negative effects of video-game overuse; one of the boys woke up earlier everyday to play computer games before going to school whilst they both use their technological devices on their way to school and back. For this reason Brody (2015) argues that technology is 'killing' daily conversations which normally would have taken place during road trips and other social events such as dining out in a restaurant.

The research outlined in this section has identified that researchers and educationalists see technology as having advantages and disadvantages and can both support and inhibit learning. But any analysis of this concept must surely depend on what 'learning' actually is? If within this context, 'learning' includes reading and writing activities, one must question what reading and writing actually is, or what it has become, and how such constructs are defined in the digital age. It is only through an understanding of what reading and writing is that one can begin to understand what constitutes 'learning'. It can be further argued that most of the research outlined in this review is assuming that 'learning' is a fixed construct and that it is defined by the targets of a curriculum. Rather than trying to understand whether technology supports or inhibits learning, the research outlined has not asked the question – what is learning in a digital age? Before arguing that technology supports or inhibits students' learning it is important for 21st Century educators to firstly acknowledge the meaning of 'learning' and what reading and writing actually mean. This justifies the importance of this research study as it specifically questions this.

In sum, as this section has showed, a lot of research has aimed at answering research questions in relation to the advantages and disadvantages of the use of digital technology in the classroom and its relationship to learning. A number of scholars however have specifically investigated whether technology is improving students' levels of reading and writing and student attainment in these areas. This literature will be explored in Section 2.8 which follows.

2.8 The use of digital technology and its link to student achievement in reading and writing

The literature presented in this review so far indicates that the use of digital technology in schools is given great importance and is recognised in national and local syllabi. A number of educational policies outline the use of digital technology as a resource which is considered as an asset in order to facilitate the learning and teaching of reading and writing and reach educational goals. In several countries the initiative to make use of technological devices in the classroom setting was to raise levels of attainment. In the United Kingdom for example the initiative to make use of interactive whiteboards in classes was designed to raise levels of attainment in schools in both literacy and numeracy. This was in fact considered as the main aim and focus of the UK Government behind the implementation of such a project (Higgins, 2010).

Since digital technology has been incorporated into the education system, various researchers have investigated its use in the classroom context and have focused their studies on understanding whether it brings pedagogical change and whether technological resources increase student achievement in literacy and numeracy (Slay et al., 2008). Yet further research indicates that this might not always be an easy and straight-forward task and one cannot outline factors which help in predicting the effects that technology will have on learning and teaching (Armstrong, Barnes, Sutherland, Curran and Thompson, 2005).

Research questions from a small number of studies have tried to address measures of impact or improvement in terms of digital technology on students' attainment (Twiner, 2010). According to Lee and Winzenried's (2009) research, technology in classrooms can be considered as a transformational resource or on the contrary, a waste of money. Lee and Winzenried (2009) believe that it is the way that technology is used by the teacher which should be given most importance and that implemented wisely, technological devices can improve the learning level across the whole school and would transform schooling (Woodward and Cuban, 2001).

In order to determine higher student attainment, Betcher and Lee (2011) argue that teachers need to use technological devices in the normal daily routine within the classroom setting. Interactive whiteboards and tablets for example shall be used as a student-centric technology or else as a student-and-teacher-centric technology since they are primarily designed to get teachers and/or students to work collaboratively (Betcher and Lee, 2011).

As explained in the first part of this section, a number of researchers have focused their studies on whether digital technologies improve interactivity and enhance literacy levels (Thomas and Cutrim Schmid, 2010). These studies address this notion from various viewpoints. Some studies have focused on the use of digital technology whilst focusing on a particular subject area, others have focused on the teachers' perspectives, whilst others chose to focus on the students' perspectives (Slay, et al., 2008). Many have argued that the technology in itself does not guarantee student attainment and that teachers are the ones responsible for pedagogy rather than technologies (Thomas and Cutrim Schmid, 2010).

Thomas and Cutrim Schmid (2010) argued that technology in itself is far from being a solution to literacy problems and that digital technologies are used as a 'political football' and biased by political interests. Furthermore, Thomas and Cutrim Schmid (2010) argue that the use of technology does not guarantee a better learning environment and improvement in reading and writing. The presence of technology can represent opportunities for practitioners to use information in more effective ways, primarily in terms of organization and management, however they go on to argue that 'this does not automatically suggest that the learning environment for students will be enhanced. The role of the teacher, his or her knowledge of the technology and how to use it, will be the most important factors in determining if successful progress can be identified and supported' (p.xx).

Moss, Carey, Levaaic, Armstrong, Cardini and Castle (2007) agree with Thomas and Cutrim Schmid's (2010) argument and state that technology in itself has not transformed existing pedagogies. The same was evidenced by Slay's et al. (2008) study which showed that digital technologies capture the students' interest but value needs to be given to the role of the teacher rather than the technology. A

study on the use of iPods by Patten and Craig (2007) mirrors similar findings showing that the use of iPods in the classroom encourages students to be more engaged in their tasks but this did not lead to better test scores.

The studies outlined in this section have shown that no link has been demonstrated between the use of digital technology and student achievement in reading and writing. However, Tyre (2002) showed that 91% of teachers in her study have argued that handheld computers have helped students improve their written work since they used word processing software features. The study was conducted with over 100 teachers and found that most teachers felt positive about their experience using handheld computers in classroom.

Research offers a mixed picture about the use of technology and its relation to student academic progress. Although most researchers have argued that the technology does not improve literacy levels in itself, many have agreed however that through digital technology students focus more on reading and writing tasks and it motivates students to learn (Thomas and Schmid, 2010). On the other hand, some studies have shown that the use of technology enhances student control and emphasises traditional teaching where students are meant to listen and follow the teacher's directions. Research seems to agree that effective learning of reading and writing is possible when educators are 'convinced of the value of technology and fully understand the nature of interactivity and its pedagogic implications' (Thomas and Schmid, 2010, p.5).

The research discussed above is situated in a paradigm that views reading and writing as a static and traditional construct, which is defined by the school discourse and focuses on the extent to which 'new' technologies can help to achieve attainment in 'old' constructions of literacy. The definitions outlined at the beginning of this chapter challenge this and argue for new definitions of the terms 'reading' and 'writing'. This highlights a need to understand what reading and writing actually are in the digital age. However as this research is set in the Maltese context it is firstly necessary to examine the Maltese education context as well as the local policies pertaining to reading, writing and technology.

2.9 The Maltese policy context

This section aims to provide an overview of the Maltese policy context in terms of using technology and its connection with reading and writing in Maltese schools. This will be explained within a context of the overall curriculum and policy documents.

The very first document related to education was the 1988 Education Act which introduced a number of important concepts including the right of every Maltese citizen to receive education without any form of discrimination (Sultana, 1997). The Education Act (1988) also declared the right of the State to regulate education and to establish a National Minimum Curriculum Framework of studies for all schools in Malta and Gozo (Sultana, 1997). The process of reviewing and forming the National Minimum Curriculum was started in 1995 with the publication of 'Tomorrow's Schools: Developing Effective Learning Cultures' which was written by a number of Maltese practitioners and educators (Ministry of Education, Employment and the Family, 2011).

After this publication the Ministry of Education published a draft of the National Minimum Curriculum in 1998 which was followed by the final document in 1999 titled; 'National Minimum Curriculum: Creating The Future Together' (Ministry of Education, Employment and the Family, 2011). After the publication of this document, 'For All Children to Succeed' (2005) was published with the aim to raise important issues for the future of Malta's education system (Ministry of Education, Youth and Employment, 1995).

After the publication of the 1999 National Minimum Curriculum, 'the year 2003 saw the start of in-depth analysis and discussion on key areas, each presenting challenges' which needed to be addressed in The National Curriculum Framework which was published in 2011 (Ministry of Education, Employment and the Family, 2011, p. 14). Amongst the presented challenges was that of information technology which envisioned the publication of the document; 'Smart Learning: Malta's National eLearning Strategy 2008-2010'. This document can be regarded as the first to address information technology and the challenges outlined included

ways to promote student-central pedagogies in order to ensure that autonomous learning is taking place (Ministry of Education, Employment and the Family, 2008). The eLearning Strategy (2008) also highlighted the importance for a fundamental shift:

> …in the relationship between the teacher and the student. From one where the teacher provides and organises most of the content, knowledge and skills, this relationship needs to become one where the teacher guides, challenges, and monitors activities and where students are actively participating and taking responsibility for their learning and working towards becoming autonomous, technologically proficient learners (p.15).

Following this publication came the 'National Minimum Curriculum Framework' (2011) which was a series of consultation documents followed by the publication of 'A National Curriculum Framework for All' (2012). During the past three years the Maltese education system has welcomed the publication of two important documents; the 'Framework for the Education Strategy for Malta 2014 – 2024' which was published in 2014 and 'A National Literacy Strategy for All in Malta and Gozo 2014 – 2019' which was published in the same year.

Figure 2.4 presents a timeline diagram which summarises the policies outlined in this section. It is important to note that there are other Maltese educational policies but those outlined in Figure 2.4 are directly related to 'literacy' and 'digital technology' within the Maltese context. It can be argued that the last document listed in Figure 2.4 is the latest document which clearly defines what reading and writing mean within the Maltese context. According to the Learning Outcomes Framework (2015), at Level 5 (which is equivalent to Grade 3), a student is considered a reader if he or she can:

- confidently read aloud a given text using clear diction,
- understand a variety of text genres including online texts,
- look for information in a given text,
- share his or her opinions about the text read,
- can understand the basics of text organisation,
- can make assumptions about the text from its title.

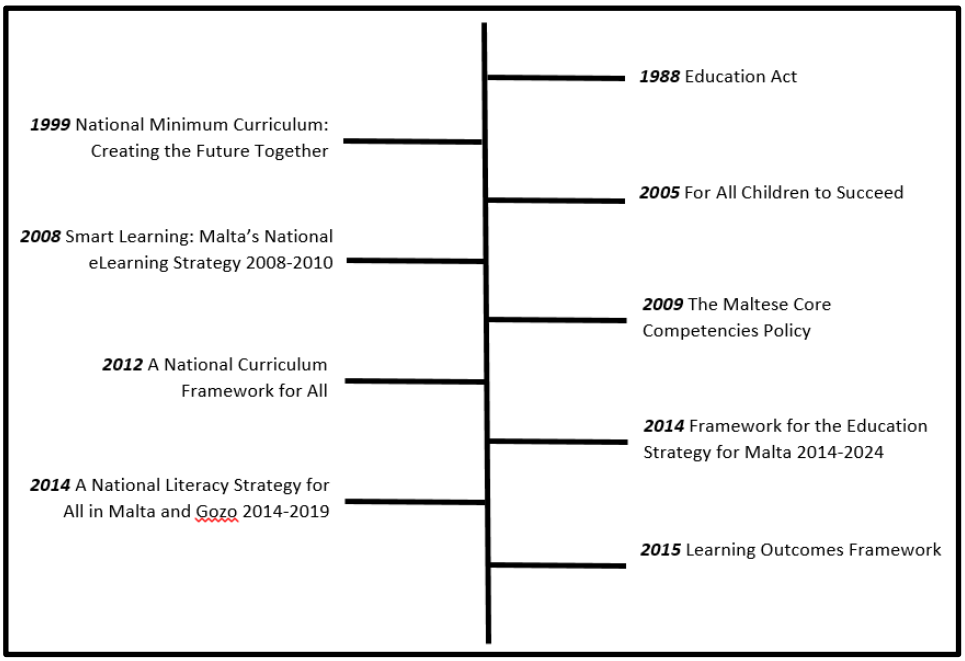

Figure 2.4: ***Maltese policy timeline***

As for writing, the Learning Outcomes Framework (2015) states that a student who has reached the end of Grade 3 should be able to:

- write in a legible manner,
- use the right presentation to convery the purpose of a text,
- write in cursive writing,
- write simple sentences in response to other forms of texts,
- use particular words and vocabulary to make effect in writing,
- express opinions through writing on a variety of topics,
- write a short paragraph for an audience and with a purpose,
- write an interesting story and add detail to basic sentences,
- spell correctly,
- make a given text more interesting by changing the vocabulary,
- use resources for guidance in presenting written work accurately,
- organise ideas in coherent paragraphs,
- write a simple set of instructions.

In relation to this the following section shall provide a critical overview of the policies outlined in this introduction. These are going to be discussed in relation to literacy and the use of digital technologies in Maltese schools. Section 2.10 will also clarify how literacy is defined in the Maltese context.

2.10 Literacy and the use of technology in Maltese primary schools

The policies outlined in Section 2.9 all have the concept of literacy at the heart of each document. However the use of digital technologies in Maltese classrooms has only been recently addressed. The previous sections of this Literature Review have dealt with the definition of 'literacy'. However how literacy is being defined within the Maltese context has not yet been elaborated.

The Maltese Core Competences Policy (2009) defines literacy as 'the ability to express oneself confidently in Maltese and/or English, to read meaningfully and to use the written word for the purposes of communication so as to access the full curriculum and thus lead to mastery of the key competences for lifelong learning' (Directorate for Quality and Standards in Education, 2009, p.17). The literacy aims of the National Policy and Strategy for the Attainment of Core Competences in Primary Education are the following:

- To ensure learners develop their ability to express themselves adequately and coherently by means of the spoken and written word;
- To target all learners both in terms of learning styles and levels of competence;
- To ensure that learners are provided with up-to-date appropriate resources for the development of their full literacy potential;
- To offer learners every opportunity to look upon reading and writing as enjoyable and pleasurable activities;
- To reinforce the basic skills of the CoreCompetences by using the commonalities within each area for the purposes of extension and elaboration (e.g. sequencing skills in literacy, eLiteracy and numeracy);
- To offer teachers professional development and the possibility of sharing of good practice.

Figure 2.5: ***The literacy aims of the Core Competences Policy***
Source: Directorate for Quality and Standards in Education, 2009, p.17

The Core Competences Policy (2009) also 'recognises the multitude and variety of definitions of literacy' (Directorate for Quality and Standards in Education, 2012, p.5). The policy elaborates further and explains that since information and communication technologies are influencing society, the definition of 'literacy' has been redefined and now includes the ability to read and also interpret media. For the purpose of the document, 'eLiteracy' refers to 'the use of digital technologies to explore other areas of the curriculum' (Directorate for Quality and Standards in Education, 2009, p.19). The eLiteracy aims of the policy are the following:

- To ensure learners to become aware of digital resources and select appropriate technologies to carry out specific tasks;
- To help learners develop a positive attitude towards digital technologies;
- To equip leaners with eCompetences so as to engage in eLearning initiatives to become lifelong learners;
- To develop active learning opportunities through appropriate, personalised and differentiated activities.

Figure 2.6: ***The eLiteracy aims of the Core Competences Policy***
Source: Directorate for Quality and Standards in Education, 2009, p.19

It can be argued that the definitions of 'literacy' and 'eLiteracy' both mirror those outlined in the first section of this Literature Review. The Core Competences Policy (2009) also expresses the belief that 'literacy' is an evolving concept which is being influenced by outside factors such as technological advancements. The policy also recognises the need for 21st Century students to acquire the necessary 'literacy' and computer skills in order to be successful.

The publication of 'Learning Outcomes Framework' (2015) has shown a slight shift in the definition of 'literacy' and included the ability for the Maltese citizen to be bilingual. Maltese schools are welcoming more international students and Maltese students are therefore being more exposed to the English language. The most recent definition of 'literacy' within the Maltese context has therefore included the proficiency of both languages; Maltese and English and being 'literate' in Malta entails that the individual is able to communicate in both

languages. This has been presented by the Directorate for Quality and Standards in Education (2015);

> One of the most important aspects of literacy in Malta is the implications that a literate person is fluent in both Maltese and English. An essential factor to ensure that Malta remains a bilingual country is making sure that its learners develop equal competences in reading, writing, speaking, listening and comprehending in both official languages from the early years, preferably from kindergarten. Another is ensuring that learners develop the skill to switch easily from Maltese to English (or vice versa) depending on the situational need. Achieving bilingual literacy in our education means that all our young people feel comfortable and confident using both languages (p.71).

Another important policy which focuses on literacy and technology is 'The National Minimum Curriculum' (1999) which denotes that the world is constantly changing and that this should encourage Maltese citizens to engage in critical reflection in a time where the world is evolving into a 'global village' (p.13). One of the recurrent challenges that the curriculum addresses relates to developments in technology. It highlights a particularly strong need 'for our society to be always prepared for the challenges posed by a competitive global economic environment' (Ministry of Education, 1999, p.22). The National Minimum Curriculum (1999) states that the use of technology in schools and the importance for students to engage and use technological devices in a world which is constantly changing should be studied 'as an integral part of the educational system' and it should form part of the Maltese cultural heritage as does art, science and literature (Ministry of Education, 1999, p.33).

The National Minimum Curriculum (1999) also states that it is important that the Maltese educational system ensures that all students have access to technology, arguing that in doing so, 'citizens will be equipped to live in a technological, electronic and cybernetic society and will be capable of making intelligent use of this technology for the benefit of everyone' (Ministry of Education, 1999, p.25). Another significant feature present in the former National Curriculum (1999) is its recognition that curricular development is a 'dynamic process' and that as a policy

document, it is meant to be changed and adapted through time (p.4). This promise has been kept as we can now refer to the consultation documents; 'Towards a Quality Education for All – The National Curriculum Framework' which was published in 2011 followed by 'A National Curriculum Framework for All' (2012).

The main aim behind the National Curriculum Framework (2011) is that all students will exit schools with the necessary skills and qualifications and that this is done in an attractive learning environments. The same document also gives importance for the Maltese investment in information technology. This is given a lot of prominence in order to 'reduce early school leavers, retain learners in formal education for as long as possible as well as give credit to information and non-formal learning' (p.6). Furthermore the National Curriculum Framework (2011) proposes;

> 'an alternative perspective of curricular content which conceptualises learning as occurring through meaningful and challenging experiences, drawing upon students' prior knowledge, interests and dispositions. This can be best achieved through merging various subjects into learning areas to contribute to the acquisition of a body of relevant, purposeful and connected knowledge and skills that engage and motivate learners' (p.14).

This notion should encourage links between all the subjects being taught at school which can also be referred to as the 'learning areas' (Ministry of Education, Employment and the Family, 2011). Amongst the list of 'learning areas' listed in the National Minimum Framework' (2011) one finds 'technology education' and reference to design and technology and 'digital literacy'. The National Curriculum Framework (2011) presents an important focus on the role of technology for the 21st Century. It proposes five cross-curricular themes; one of which is 'e-learning' and suggests that appropriate use of ICT-based technologies can support student-centred learning. 'E-learning' is considered as a cross-curricular theme since it is considered as an important strand for a holistic education and it is meant to be embedded into the different learning areas outlined (Ministry of Education, Employment and the Family, 2011).

The ‘National Curriculum Framework Consultation Document 2’ (2011) focuses on rationale and components and it highlights the main aims behind the National Curriculum Framework. One of the aims listed is that learners should be capable of successfully developing their full potential as lifelong learners through the development of literacy, numeracy and digital literacies. The National Curriculum Framework (2011) also aims at developing learners who are capable of gaining employment in the world of work and being able to use new digital technologies.

Additionally, it can be noted that digital literacy and technological competences are both amalgamated and given equal importance in the consultation document. The aims behind ‘The National Curriculum Framework’ (2012) which was published after the consultation document ‘The National Curriculum Framework’ (2011) mirror those presented in the latter document. The National Curriculum Framework’s (2012) aim is to ensure that ‘in the context of the holistic entitlement of the Learning Areas, young people in compulsory education have as an indispensable prerequisite mastery in Maltese and English, Mathematics, a Science subject and Digital Literacy’ (p.iii). The National Curriculum Framework (2012) also promotes learning programmes which encourage practitioners to teach through the use of eLearning (Ministry of Education, 2012).

The Working Group who worked as a consultation team in the process of forming the new National Curriculum Framework (2012), have presented a number of changes. They placed ‘literacy’ as the first cross-curricular theme to highlight its importance; ‘placing literacy as the first cross-curricular theme highlights the fact that all learning happens primarily through language in its various forms, and that therefore all educators need to see themselves as guarantors of the language mastery required of their learners in their particular area of knowledge’ (p.9). The framework implies that literacy should be regarded as an important concept by all practitioners and the school community needs to embrace the primacy of competences in literacy.

Figure 2.7 shows how the learning areas and the cross-curricular themes in the National Curriculum Framework (2012) are amalgamated and combined together to ensure success. The National Curriculum Framework (2012) denotes that the

cross-curricular themes explored in Figure 2.7 should be taken into account when planning the curriculum. The themes also need to be interwoven with the learning areas because 'this gives learning areas coherence, relevance and stability providing a holistic learning experience by highlighting common objectives, content and pedagogies' (p.39).

Figure 2.7 also shows that literacy and technology – the subjects of this Literature Review – are both given prime importance in the Maltese education system. It can also be noted that the Maltese education system regards 'literacy' and 'digital literacy' as two different concepts. This notion was also reflected in the Core Competences Policy (2009) in which 'literacy' and 'eLiteracy' were regarded as two different subjects. In fact the Core Competences Policy (2009) has felt the need to outline its aims for 'literacy' and 'eLiteracy' separately. It can further be argued that the literature outlined in this Literature Review also distinguished between different forms of literacy whilst suggesting that 'digital literacy' is a type of 'literacy'.

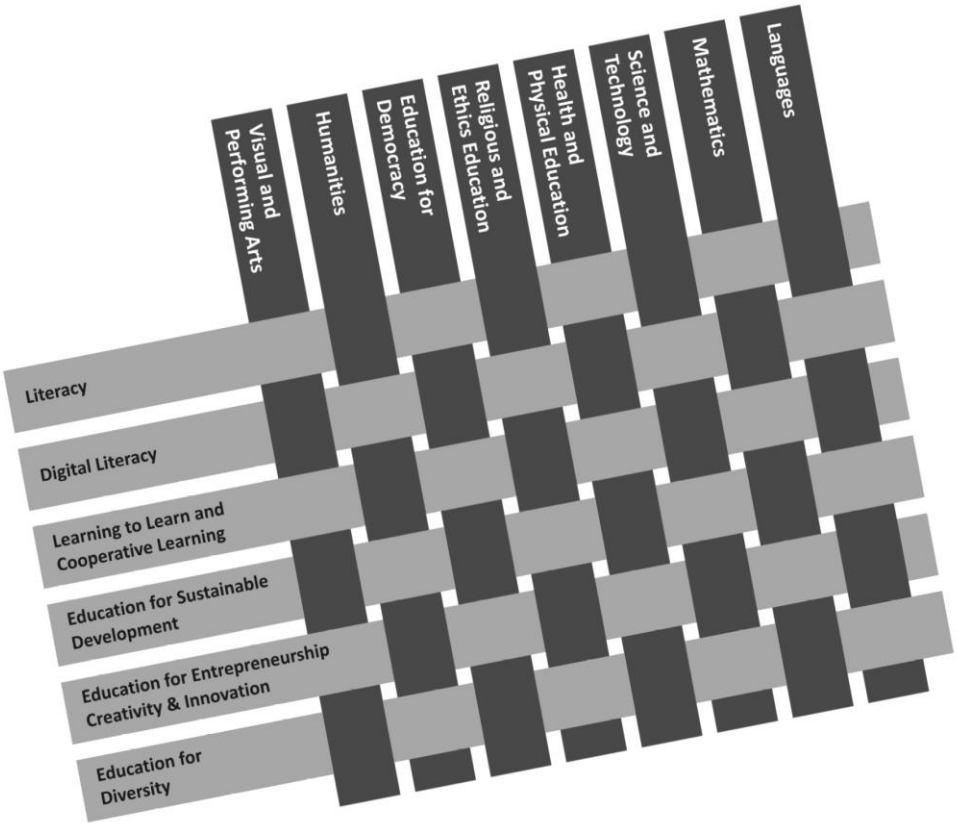

Figure 2.7: ***The learning areas and the cross-curricular themes in the NCF***
Source: Ministry of Education, 2011, p.39

The research outlined in this section has showed that local policies published by 2009 have distinguished between 'literacy' and 'digital literacy'. But an analysis of this concept must surely question whether this is of value. This confirms a need for research into understanding exactly how children are reading and writing in a modern society, given the use of digital technologies in the lives of these children. This further justifies the need for this study, especially within a context which has focused on traditional ways of teaching and which has only recently invested in digital technologies in classrooms.

Another important document which has influenced the publication of literacy policies and is related to literacy levels amongst students in Malta is the Progress in International Literacy Study – Malta Report (2011). 'PIRLS', the Progress in International Reading Literacy Study. (The Institute of Education Science, 2011) is a comparative study of ten year old children's reading literacy attainment and includes a written test in reading comprehension followed by a number of questionnaires focusing on factors related to the development of reading. The PIRLS study is held every five years and is conducted by the International Association for the Evaluation of Educational Achievement (IEA). The International Study Centre is responsible for the overall design, development and implementation of the study which 'includes establishing the procedures, overseeing instrument development, conducting training and carrying out quality assurance measures' (Ministry for Education and Employment, 2013, p.vi).

To date the PIRLS survey has been carried out three times. The first survey was conducted in 2001 and the last one was conducted in 2011. Malta took part in the PIRLS survey for the very first time in 2011 (Directorate for Quality and Standards in Education, 2013) where 3598 students participated and were chosen randomly from 96 primary schools across Malta (Ministry for Education and Employment, 2013). The questionnaires which form part of the PIRLS study were given to pupils, head teachers, teachers as well as parents (Directorate for Quality and Standards in Education, 2013).

PIRLS identifies two main purposes for reading which include; literacy experience and acquiring and using information. It also identifies four main comprehension

processes which 'focus on the retrieval of explicitly stated information and ideas, the making of straight-forward inferences, interpreting and integration of ideas and information, the examination and evaluation of content, language and textual elements' (Ministry for Education and Employment, 2013, p.vii). Furthermore, the PIRLS study identified four benchmarks of reading achievement which were described as the low, the intermediate, the high and the advanced benchmarks and were set at 400, 475, 550 and 625 respectively (Ministry for Education and Employment, 2013). Malta's mean reading score was that of 477 and was ranked 35th of 45 participating countries (Ministry for Education and Employment, 2013).

Following this result Hons. Evarest Bartolo, the Minister for Education, argued that such an alarming result served as 'an eye opener' in terms of policy making decisions on literacy skills. He stated that more emphasis must be placed on reading and stressed the important role of parents and also grandparents in exposing children to the world of books. Hons.Bartolo (2014) also said that the PIRLS study showed that the Maltese educational system was not dedicating enough school time to reading when compared to the international average.

Following the publication of the PIRLS report (2013) Hons. Bartolo (2014) also mentioned that the Department of Education was collaborating with the Malta Union of Teachers to discuss the Malta results. He further explained that discussions would be held in order for the authorities to develop an action plan which should include teacher training and offers support for the parents. It can be argued that the PIRLS report (2013) is based on research on the students' reading and the report does not specifically assess students' reading through technology. The report shows that Maltese schools report that 15% of students have access to a computer available for one or two pupils. This is below the international average of 41%. Malta ranks at 67% however where schools have one computer for three to five pupils. Although Malta's rank is quite high the PIRLS report (2013) shows that there was no relationship between the reading achievements score of students and the number of computers available in classrooms or schools.

The report also shows that 73% of teachers in Malta use computers for reading lessons which is quite high when compared to the international average of 45%.

The largest number of students use computers to look for information and to read stories or other text. It was reported that computers were also being used to write stories or other text and to develop reading skills through the use of computer software. In relation to this the PIRLS report (2013) confirms again that the use of computer use in reading lessons 'does not seem to result in any significant rise in the mean reading attainment scores of students' and 'the international mean score of 513 is the same for those pupils who have computers available for reading lessons as well as those who do not' (p.115).

In relation to teaching resources the study has shown that Maltese teachers made most use of books, textbooks and worksheets as teaching resources or to carry out reading tasks. Workbooks and worksheets were mainly used as a supplement rather than a basis for instruction. The PIRLS report (2013) shows that Maltese teachers' use of technology to teaching reading was limited to the use of computer software. Within the Maltese context computer software was mainly used as a supplement. In fact 55% of Maltese teachers used it as a supplement whilst 16% of Maltese teachers used computer software as a basis for instruction.

It can be argued that the PIRLS report (2013) has confirmed a number of issues. The report has shown that Malta does not have a high rank in literacy levels and in fact this has been a major concern. The study also showed that reading within the context of the PIRLS study is defined as the 'reading of text' and did not take into consideration the more elaborate definition of 'reading' through the use of digital technology such as the reading of 'images' and reading through skimming or viewing. The report limited the research on the use of computer software to teach reading whilst local policies and reports confirm that Maltese students are exposed to other forms of technological devices as this will be explained further on.

Another important document which can be linked to those outlined is 'The Smart Learning Strategy' which is a strategy document published by the Ministry of Education, Youth and Employment and is designed to prepare children for a better world whilst giving children 'the most sophisticated tools available to any generation of young people up to now. It also equips our trusted education professionals with the resources they need to reach out to their pupils and students'

(The Ministry of Education, Youth and Employment, 2008, p.4). This document also aims to serve as guidance in the process of integrating ICT with traditional teaching systems which should serve as an 'incentive' for students to learn and for teachers to teach (The Ministry of Education, Youth and Employment, 2008).

The Smart Learning Strategy (2008), which is the only formal ICT strategy for Malta, draws on research in its field and states that technological devices 'had a positive effect on literacy, mathematics and science tests' and 'the wider positive benefits were found to be improved motivation, concentration, cognitive-processing, independent learning, critical thinking and teamwork' (The Ministry of Education, Youth and Employment, 2008, p.7). The Smart Learning Strategy (2008) is based on seven important principles and three main strategic directions: in skills, infrastructure and content. Each strand is segmented into strategic aims and action plans for three years: 2008, 2009 and 2010 (The Ministry of Education, Youth and Employment, 2008). The Smart Learning Strategy (2008) suggests that the use of ICT in teaching needs to shift away from didactic teaching modes but at the same time builds on these methods and integrates with them. The strategy also highlights the importance for teacher support and training whilst promising that practitioners will be given all the assistance and guidance required (The Ministry of Education, Youth and Employment, 2008).

The strategy's aim in relation to the setting up of digital technology in the classroom context is to equip classrooms with electronic tools that will make learning more interesting to children living in a digital age, for whom 'the methods once used for teaching their parents are now far from suitable or appropriate' (The Ministry of Education, Youth and Employment, 2008, p.13). Malta's National e-Learning Strategy (2008) was the first and only document which has very briefly referred to the use of digital technology in Malta.

Policy documents show that the Maltese context distinguishes between 'literacy' and 'digital literacy' and it focuses on these concepts individually. The policies outlined also show that the Maltese education system is highly concerned regarding the literacy level of students at primary level. As the PIRLS (2013) study showed,

Maltese students lack in basic reading skills and this is why literacy is a major concern and all stakeholders agree that action needs to be taken in order to raise good standards of literacy amongst Maltese students. The policies outlined so far also show that the Maltese education system seems to agree that the use of digital technology should be present and the teaching of reading and writing should be carried out through its use. Although the policies refer to 'technology' as an 'umbrella term' up till 2014 there was only one official existing document which refers to the use and aims of technology in primary schools; 'The Smart Learning Strategy' (2008).

The year 2015 marked a shift in local policy and report publications in relation to the subjects of technology and reading and writing. As it has been previously explained during March 2014 and March 2015 Malta participated in the 'One Tablet per Child Pilot Project' and in June 2015 the 'Research Report on the Pilot Study of the One Tablet per Child Project in Malta' was published. The report shows that the use of digital technology in Maltese classrooms has increased (Department of eLearning, 2015), and that Malta is one of the few countries in the world to invest in 1:1 handheld devices at a national level and through this Malta is 'breaking new ground in this area of education' (p.5).

The project was initiated and promised by the Maltese Government's commitment through its last programme for the legislature. The current Maltese Government promised to provide a free tablet to all Grade 4 students and the project was aligned to the 'Framework for the Education Strategy for Malta 2014-2020' with tablets being regarded as 'a tool that will actively support educators and education authorities to empower learners to become more literate citizens and thus be able to participate more actively in the employment market and contribute effectively to society' (p.11). The National Literacy Strategy for All in Malta and Gozo 2014-2019 also tackles the notion of 'digital literacy' and states that the ability to learn through different technologies is extremely important in order for students to be able to contribute in community activities.

Although most documents and reports referred to in this section have shown and addressed the importance of technology in relation to reading and writing the 'Research Report on the Pilot Study of the One Tablet Per Child Project in Malta' (2015) has been outstanding and unique in itself since it made it explicitly clear from the beginning of the report that the 'One Tablet Per Child Project' is an educational project rather than a technological one and this is important because as Zammit (2015), the Director for eLearning has stated in his foreword message the research report focuses primarily on the teaching and learning experiences with the tablet and the recommendations made reflect this framework.

Recently the Maltese education system has been breaking new ground in terms of reading and writing policies. The year 2015 witnessed the publication of the Learning Outcomes Framework (Directorate for Quality and Standards in Education, 2015) which was proposed through the National Curriculum Framework (2012). The aim of the Learning Outcomes Framework (2015) is to:

> free schools and learners from centrally-imposed knowledge-centric syllabi and to give them the freedom to develop programmes that fulfil the framework of knowledge, attitudes and skills-based outcomes that are considered national education entitlement of all learners in Malta. The LOF is thus intended to eventually lead to more curricular autonomy of colleges and schools so as to better address the learning needs of their learners (p.5).

The Learning Outcomes Framework (2015) moves towards a learning outcomes approach rather than a content-based curriculum and it is designed on four education aims which were outlined in the 'Education Strategy for Malta 2014-2024' (Ministry for Education and Employment, 2014). One of the aims of the Learning Outcomes Framework (2015) is in fact to lower the number of 'low achievers' and 'raise the bar in literacy, numeracy and science and technology competence and increase student achievement' (p.6).

This has been proposed after Malta has participated in the PIRLS, PISA and TIMSS international studies. The results from the studies show that Malta has an

unacceptably high level of low achievers. The EU2020 target is to have less than 15% of the student population classified as 'low achievers' and in the light of this the Learning Outcomes Framework (2015) has been published with the aim of adopting keystones for assessment and learning throughout compulsory schooling (Directorate for Quality and Standards in Education, 2015).

The publication of The Learning Outcomes Framework (2015) is breaking new ground because it is the first document which takes into consideration the relationship between reading, writing and digital technology. This has been done in a very direct manner, through the learning area outcomes of each subject taught in schools. The Learning Outcomes Framework (2015) suggests that 21st Century learners need to understand audio-visual texts across a range of different genres. It is also aware and encourages learners to present written forms of writing through technological devices which are already present in Maltese classrooms and others which are going to be implemented in the near future.

Additionally, this policy has shown that reading and writing are not solely related to paper-based activities. The Learning Outcomes Framework (2015) recognises the need for students to 'read and understand age-appropriate texts online across genres as well as understand the different parts of the text *e.g. headings and subheadings, and the way hyperlinks work*' (p.12). It can be argued that this document has been unique in the sense that it was the only one of its kind to consider reading and writing through technological devices as an important aim and skill.

The Learning Outcomes Framework (2015) also recognises the need to recognise 'digital literacy' as an essential feature for learning and the Directorate for Quality and Standards in Education (2015) also recognised it as a 'discipline of its own' such as science, music, art and literature. The document also presents a list of students' learning outcomes which confirm how reading and writing are becoming more intertwined in the digital age. Amongst the theme learning outcomes one

finds the following statements which all start with the word 'I', which refers to the student;

- I can safely and critically navigate between online sources and select information effectively,
- I can communicate through a variety of digital devices and applications,
- I can adapt my communication modes and strategies according to the people I am communicating with,
- I can use different digital tools to share knowledge, content and resources,
- I can use digital technologies to participate in online citizenship,
- I can express myself through digital media and technology (p.61).

In conclusion this critical overview of Maltese literacy and technology policies has shown that through the years Maltese policies and reports have always given importance to reading and writing and more recent policy documents have also considered the impact of digital technology on reading and writing. The Learning Outcomes Framework (2015) which is the most recent educational policy document published in Malta also highlights the importance of recognising 'digital literacy' as an important feature of teaching and learning.

2.11 Summary

This Literature Review has critically analysed the use of digital technology in relation to the teaching and learning of reading and writing in the 21st Century. It has shown that defining the term 'literacy' is not an easy task since it is an evolving concept and is being constantly affected by technology and rapid social changes. It has further shown, that most of the studies situated reading and writing into quite a narrow discourse. Conversely, research seems to support the view that the education system needs to keep up with the constant technological changes around us and amalgamate these in the classroom context in order to better improve the teaching and learning of reading and writing. However we do not yet fully understand how digital technology is changing constructions of reading and

writing. This therefore highlights the importance of the study reported in this thesis.

This chapter has also shown how reading, writing and technology are at the heart of various policy documents, however up to 2009 Maltese policy documents regarded 'literacy' and 'digital literacy' as two separate components. The analysis of this thesis will question whether this is adequate and whether this was reflected through the findings reported in this thesis. In order to understand the context of this study, the following chapter will outline and justify the methodological issues and research methods used. It shall provide information about the participants, how data were gathered and analysed and which ethical features were taken into consideration.

CHAPTER 3

Research Methodology

Chapter 3: Methodology

3.1 Introduction

As explained in Chapter 1, this study sought to explore how students are reading and writing in the context of developing digital technologies and the two main research questions behind this study are the following:

1) What is reading and writing in the digital age and how do students and teachers define reading and writing in the 21st Century?
2) What are teachers' and students' views on the role of technology in reading and writing in the classroom?

In order to address the research questions, further sub-questions were also formulated at the beginning of this study, including:

- Is digital technology being used within the classroom setting? When and how?
- How is digital technology being used to teach reading and writing and how is it defining 'new literacy' teaching?
- Is digital technology changing constructions of reading and writing?
- Do students and teachers regard 'reading' and 'writing' as two separate concepts or does technology promote an amalgamation of the two terms?
- Do students and teachers regard technology as an essential learning and teaching tool?
- What are the advantages and disadvantages of using digital technology to produce and view text?
- How are students making sense of text and how is their work being presented?

This chapter will discuss and justify the methods of data collection in order to answer the research questions. The study used naturalistic, interpretive and qualitative approaches to present a case study informed by ethnography, developed using a mixed methods approach. Data was analysed through a thematic approach

and the justification of this approach will be explored in more detail in Section 3.7 of this chapter.

In order to portray a clear overall picture of the research conducted, this chapter is introduced by presenting Figure 3.1 which shows a brief overview of the research paradigm, the research approach and the research tools chosen for this study. Each strand will be examined in more detail in the following sections of this chapter. The justification for the research strategy and research tools chosen will be discussed in each respective section. Limitations of the study and ethical issues will be discussed at the end of this chapter. In order to better understand how this study was explored the research paradigm will be explained in Section 3.2 which follows.

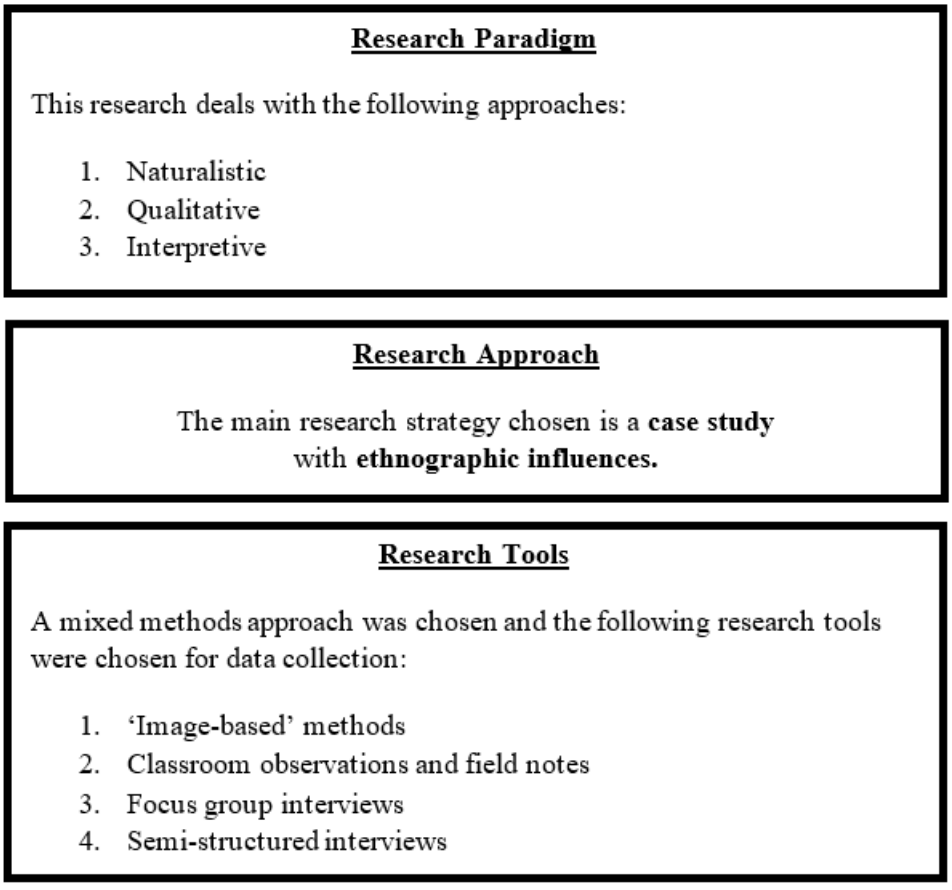

Figure 3.1: ***Research overview***

3.2 Research paradigm

Since the research was conducted within a classroom setting, this study uses naturalistic, interpretive and qualitative approaches. Research was conducted within the natural setting of the participants and I took great care to ensure that I, as the researcher did not influence the behaviour being observed. This in fact is one of the concepts which naturalism proposes, though I must acknowledge that, as their teacher, there was some inevitable influence. Hammersley and Atkinson (2001) emphasise that naturalism deals with studies carried out in their 'natural state' rather than 'artificial settings' and this research study was carried out in ways which were sensitive to the nature of the setting; the classroom. As a teacher, I was part of this 'reality' and my presence was therefore part of the 'naturalistic nature' of this study.

The primary aim of naturalism is to describe what happens in a setting, how the participants were involved and view their own actions and those of others and how the participants view the contexts in which the actions take place (Hammersley and Atkinson, 2001). The study sought to understand a particular culture, the teaching and learning of reading and writing in the digital age and in doing so this research was primarily interested in answering *'how* 'and *'why'* questions.

In order to answer these questions a qualitative approach was chosen. Through this approach the researcher is more open to explore behaviour, attitudes and experiences. The qualitative approach was also chosen since its purpose is to provide information about a particular situation and such information can be used to understand social change. Furthermore qualitative research ensures that there is 'richness' and detail to data and it 'scores well in terms of the way it deals with complex social situations' (Denscombe, 2010, p.304). The qualitative approach also served as a tool which stimulated students' individual and daily experiences and therefore as a researcher I was provided with a clearer picture about the way digital technology influences children's constructions of reading and writing. Qualitative approaches therefore sought to understand the wide spectrum of the environment research.

Cohen et al. (2010) refer to ‘a question of terminology’ (p.21) in their work and explore the differences between the normative and interpretive paradigms. This research is based on interpretivism and exploratory theory since it primarily deals with particular individuals, namely students and teachers, and focuses on intentional behaviour. Furthermore, the interpretive paradigm is non-statistical, is concerned with meanings rather than causes, ‘investigates the taken-for-granted’ and involves the researcher directly in the field of research (Cohen et al., 2010, p.33). The study embraced all of these qualities and did not collect numerical data, but rather sought to understand meaning – how the technology influences constructions of reading and writing.

Interpretivists argue that ‘there is no such thing as an objective social world’ but it is rather ‘*constructed* differently by each person in each situation they face, so it is useful sometimes to see the world as a stage on which we play out characters’ (Thomas, 2011, p.51). In the case of this research the ‘stage’ is a 21st Century classroom whilst the ‘characters’ observed were the students. The interpretative inquiry was chosen to understand this setting because it is an approach which understands the environment in a deep manner (Thomas, 2011). Interpretivism also blends and is associated with qualitative research and in this case both approaches were used in order to obtain an understanding of the ‘world’ from an individual perspective. As a researcher I was also part of the community and environment studied which facilitated the process and helped me gain more in-depth insight.

The interpretive approach fitted well with the study conducted because it deals with a fluid situation. Throughout the years, literacy has been socially constructed, is changing and will continue to change (Kress, 2003). In relation to this, one of the distinguishing features of the interpretive, naturalistic and qualitative approach is that it amalgamates well with situations which are changing (Cohen et al., 2010) and the area being studied is in fact evolving and affected by the social context. Interpretivism understands the ‘subjective world of human experience’ and it seeks to understand a person ‘from within’ (Cohen et al., 2010). The interpretive paradigm is characterised by a concern for understanding the individual and in the

case of this research study the individual it sought to understand was the learner in the digital age.

The research paradigm behind this research dealt with naturalistic, interpretive and qualitative approaches, adopted as the main research strategy; a case study with ethnographic influences. The section which follows will provide the justification for choosing this approach and explore some of its limitations.

3.3 Research approach

The main research approach chosen for this research is a case study with ethnographic influences. Bassey (1999) presents a historical overview for a definition of a 'case study' and agrees with Lincoln and Guba (1985) that 'what is a case study?' is an easy question to ask but difficult to answer. Additionally Bassey (1999) outlines different categories of case study such as story-telling and picture-drawing.

The purpose of this choice of approach is presented in Table 3.1 which is adapted from Denscombe's (2010) table titled; 'Research strategies and research purpose; some links'. Through the case study approach the 'complex relationship' between digital technology and constructions of reading and writing was studied in the setting of the 21st Century classroom. In order to ensure that the case study was exploratory, an ethnographic 'flavour' was added to the case study approach. As Table 3.1 shows, ethnography describes cultural practices and interprets social interaction within a culture. The case study approach was implemented in the light of ethnography since I wanted to understand the context throughout a particular period of time, that being a whole scholastic year.

Strategy	*Purpose of Research*
Case studies	• understand the complex relationship between factors as they operate within a particular setting
Ethnography	• describe cultural practices and traditions • interpret social interaction within a culture

Table 3.1: 'Research strategies and research purpose; some links'
Source: Adapted from Denscombe, 2010, p.5

A ‘case study’ looks at the subject as a whole, through various angles (Thomas, 2011). In the case of this research the main aim was explored within its own context and it was also elaborated through the point of view of students and respective teachers. Although this study has sought to seek the individual perspectives of the students and teachers chosen, the main scope behind this research approach was to gain a community perspective and understand the context into how students were reading and writing within their classroom context. Throughout this research, observations were carried out to understand the context in depth and although students had the opportunity to express their individual insights I was more interested to seek a collective perspective and that is why focus group interviews was also chosen.

One cannot generalise from a case study but it is the ideal way to get a rich picture and gain ‘analytical insights’ (Thomas, 2011). In relation to this Clough and Nutbrown (2012) argue that through a case study the group is not generalizable but it provides ‘a collective viewpoint of those present (at that time) in that composition’ (p.94). They further argue that if generalizable findings are needed, different methods should be used.

Through the study conducted I wanted to gain a deep insight into how constructions of reading and writing are changing and growing in the digital age. Thomas (2011) elaborates on this even further and provides the following definition of a case study:

> Case studies are analyses of persons, events, decisions, periods, projects, policies, institutions or other systems which are studied holistically by one or more methods. The case that is the subject of the inquiry will be an instance of a class of phenomena that provides an analytical frame – an object – within which the study is conducted and which the case illuminates and explicates (p.23).

In relation to Thomas’s (2011) argument this research has mainly used the case study approach because it deals with the analysis of a particular group of students to understand how they are learning to read and write in the digital age. This research aimed at analysing this in detail, whilst it did not seek to generalise. In

order to address the research questions the context of study needed to be understood 'holistically' and the case study approach facilitated this process.

Additionally, interpretive enquiry is closely combined with the art of a case study since 'each calls for rich, intensive understanding' (Thomas, 2011, p.124). Furthermore a case study approach and the interpretive enquiry both demand 'a deep understanding of the multifaceted nature of social situations, so they complement each other and seem natural with each other' (Thomas, 2011, p.124). The main feature of my choice of case study lies in the interest I have in the subject of my study; the use of digital technology to teach reading and writing – a subject that I am highly interested in and which will eventually help me develop as a teacher.

The case study reported in this thesis is both unique and typical in that the subject concerns a 'new' concept which has not been explored in the Maltese context and which is currently a national priority. Both students and the teachers concerned contributed and as the researcher and also a teacher in the school I could closely address the 'why' and the 'how' questions. As Thomas (2011) argues in a case study approach one needs to 'drill down' as deeply as possible to obtain evidence and data. One must also observe the case from multiple viewpoints in order to develop a 'polyhedron of intelligibility'; a term used by Foucault which refers to research which looks at facets and intersections (Gutting, 2005). An important strength of the case study approach is that 'it allows the researcher to use a variety of sources, a variety of research methods as part of the 'investigation' (Denscombe, 2010, p.54). Denscombe (2010) elaborates on this through Table 3.2 which shows the main characteristics emphasised through case study research.

Case study research characteristically emphasizes		
Depth of study	rather than	Breadth of study
The particular	rather than	The general
Relationships, processes	rather than	Outcomes and end-products
Holistic view	rather than	Isolated factors
Natural settings	rather than	Artificial situations
Multiple sources	rather than	One research method

Table 3.2: ***Characteristics of case study research***
Source: Denscombe, 2010, p.54

As a researcher I was interested in understanding the context I was researching in depth, in the relationships and processes and in obtaining a holistic view of the scenario being researched. In the light of Table 3.2 data in this research were collected from two main classroom settings, one of which was participating in a pilot project. The data were collected within a time frame of a scholastic year. Time in this case might be regarded as a limitation in itself because if there was more time allotted for this study, further enriching data might have been obtained. However this study was more concerned with 'depth' rather than 'breadth' and this was another reason why the number of classrooms observed was limited to two. Research was conducted in the natural setting and data were collected through various research methods. Furthermore I decided to focus on one school and two classes in order to have a smaller and more manageable number of participants and collect data over a longer time frame.

In his book 'Case study research in educational settings' Bassey (1999) argues that 'case study' in education should be reconstructed and presents a conceptual reconstruction of educational case study. Bassey (1999) presents his proposals about educational case study in Figure 3.2 below. The proposals in Figure 3.2 were taken into consideration when choosing the type of approach for this study.

An educational case study is an empirical enquiry which is:

- conducted within a localized boundary of space and time (i.e. a singularity);
- into *interesting* aspects of an educational activity, or programme, or institution, or system;
- mainly in its natural context and within an ethic of respect for persons;
- in order to inform the judgements and decisions of practitioners or policy-makers;
- or of theoreticians who are working to these ends;
- in such a way that sufficient data are collected for the researcher to be able
  - (a) to explore *significant* features of the case,
  - (b) to create *plausible* interpretations of what is found,
  - (c) to test for the trustworthiness of these interpretations,
  - (d) to construct a *worthwhile* argument or story,
  - (e) to relate the argument or story to any relevant research in the literature,
  - (f) to convey *convincingly* to an audience this argument or story,
  - (g) to provide an audit trail by which other researchers may validate or challenge the findings, or construct alternative arguments.

Figure 3.2: Bassey's proposals about educational case study
Source: Bassey, 1999, p.58

Thomas (2011) argues that when a case study is interpretative in nature it can also be called an '*ethnography*'. The term 'ethnography' comes from the Greek word 'ethnos' which means 'people'. The word 'ethnography' therefore refers to the 'study of people' (Thomas, 2011). Ethnography examines what happens and seeks to ask questions – 'in fact, collecting whatever data are available to throw light on the issues that are the focus of the research' (Hammersley and Atkinson, 2001, p.1).

The case study approach with ethnographic threads was chosen since it focuses in detail on one concept and I planned to spend considerable time in the field of research. In other words, the ethnography approach was chosen alongside the case study approach because in its most characteristic form it involves the researcher directly in people's lives for an extended period of time. Through this method the ethnographer watches what happens, listens to what is said, asks the necessary questions and collects whatever data are available to throw light on the issues that are the focus of the research (Hammersley and Atkinson, 2001).

Since the main participants in this research were students, I planned to observe them within their own classroom setting; this again was suggestive of an ethnographic approach to the research given that ethnography 'bears a close resemblance to the routine ways in which people make sense of the world in everyday life' (Hammersley and Atkinson, 2001). In Thomas's (2011) own words, the 'aims of a case study and the style of interpretative inquiry dovetail together very nicely' (p.124) with them 'being made for each other: it's love and marriage – and they go together like a horse and carriage' (p.124).

The sections which follow explain how this research approach was adopted, with whom and through which methods. The main participants who were central to this research were mainly children and their class and literacy teachers. Section 3.4 will provide more information about the chosen participants, and explain why they were chosen and how they contributed to the research.

3.4 The participants

The main participants who took part in this research study were seven and eight year old boys and girls. As previously explained data were mainly collected from two Grade 3 classes in the same school where I currently teach; Grade 3.1 and Grade 3.2. The two classes were chosen because I wanted to work with an age group of children who were young, yet old enough to be able to express their views and experiences.

In addition, as Grade 3.2 were chosen to participate in the 'One Tablet per Child Pilot Project', this provided the perfect opportunity to conduct research during a time when a new feature of digital technology was introduced in my classroom setting with the specific purpose of supporting the teaching and learning of reading and writing. It is important to state however that my research was very separate from the 'One Tablet per Child Pilot Project'. One cannot exclude the fact that there was more technology being used in Grade 3.2 and this allowed me the opportunity to see how children were using technology to read and write. The other Grade 3 class was chosen deliberately in order for me to understand how these children were reading and writing even though they were not participating in the 'One Tablet per Child Pilot Project'.

Grade 3.1 consisted of nineteen students during the time the study was conducted. All but five children were Maltese - one was from the United Kingdom, another from Pakistan and three were Libyan. The Maltese students spoke to each other in Maltese and they switched to English whenever they were engaged in a conversation with one of the foreign students. Grade 3.1 was taught by Ms.Debono (pseudonym) who has been teaching the third grade for three years. A learning support assistant also helped a particular student with Down Syndrome in this class.

Grade 3.2 consisted of sixteen students. A learning support assistant assisted one of the Maltese students in class who suffered from an attention deficit hyperactivity disorder and who found it difficult to focus, pay attention and sit still. Nationalities in this class varied with one third of the class being Maltese and other students

being from Libya, Russia, America, India, Scotland, Serbia and the United Kingdom. All students could understand English and most students opted to use the English language in the classroom and during play time in order to ensure that everybody understood what was being said. I taught this particular class during the period data were collected and like the students themselves I spoke in English most of the time in order to ensure understanding. In keeping with school policy, Religion, Maltese Language and Social Studies were taught in Maltese and during these lessons the non-Maltese students were given other tasks to work on. They were mostly given books to read, writing tasks or differentiated worksheets. At times they were also asked to carry out work on one of the computers found at the back of the classroom or on their tablet.

During the time of this study, all thirty-five students were considered as participants in some way or another due to the fact that they were all observed at several occasions throughout the data collection. Throughout the study a number of students from each class were then chosen to participate in focus group interviews. Fifteen students were chosen to participate and some of these students participated in more than one focus group interview.

These students were selected after the class observations were conducted. This gave me the opportunity as a researcher to address a number of episodes observed in the classroom setting. Since I was a 'silent observer' I chose not to ask students questions during the observations themselves. However I took note of episodes which I found interesting and relevant and ensured that the students who carried them out were present in the focus group interview which followed. Therefore the choice of students for the focus group interviews was based on the observations conducted.

Table 3.3 below provides very brief information about the students who were chosen for the focus group interviews. The names presented in Table 3.3 are not the real names of the participants and further information in relation to how the students were chosen will be given in the respective sections which follow.

Name	Class	Nationality	Brief background information
Nathan	3.1	Maltese	Nathan is a seven year old boy who comes from a large family. His two brothers attend the same school as Nathan and during one of the focus group interviews he stated that he does not enjoy going to school. Nathan however enjoys break time, playing with his friends, doing crafts and playing on the computer.
Chanelle	3.1	Maltese	Chanelle is a seven year old girl who enjoys everything about school life. She loves reading and writing but feels uncomfortable whenever the teacher asks her to read in front of her friends. Chanelle's teacher described her as a very alert and mature student. Chanelle is a very obedient student and always submits homework and school work tasks on time.
Hailey	3.2	Indian	Hailey is an eight year old girl who was born in India and has been living in Malta for over two years. She speaks the Maltese language fluently and enjoys participating during Maltese lessons. Hailey is passionate about technology and was very excited when she was given the tablet at school. Hailey is a very enthusiastic student and from time to time she enjoys showing

			her friends activities which she learned to do at home on her tablet such as voice recording and creating a numerical password for the tablet. Hailey is a member of the students' school council.
Alan	3.2	Scottish	Alan's father is Maltese and his mother is Scottish. Alan was born in Scotland and came to Malta at the age of five. He is extremely close to his grandma and lives with her most of the time. Alan has explained on a number of occasions that he teaches his grandma how to use the tablet and that they read a lot of downloadable e-books together. Alan loves showing his grandmother new concepts which he learned from school.
Shanaia	3.2	Maltese	Shanaia is a seven year old girl. She is very quiet yet confident. Shanaia has an eating disorder and undergoes a lot of medical procedures in order to gain weight. She is passionate about school life and would like to become a teacher when she grows up. Shanaia is very sociable but is also very conscious of her appearance. She loves using technology in the classroom and participates a lot during class tasks.
Josef	3.1	Maltese	Josef is an outspoken eight year old boy. His teacher describes him as a very loud student. He speaks very loudly and likes

			to volunteer in class. Josef is a very energetic student and loves the world of gaming. Classroom observations showed that Josef finds it very difficult to remain seated for a long time and often speaks to his friends while the teacher delivers lessons. His teacher explained that the only time when Josef is quiet is when he is using one of the computers in class because according to his teacher technology seems to 'calm him down'.
Antoine	3.1	English	Antoine is a very diligent student. His parents are English speaking. Antoine understands everything in Maltese but prefers to speak in English. He enjoys playing football and in his free time he enjoys spending time at the football ground or playing football games at home. Antoine enjoys using the class computer and is normally first to finish reading and writing tasks. This gives him the opportunity to be able to use one of the computers for follow up activities on a daily basis.
Matthew	3.2	English	Matthew is the oldest child in his family. His mother does not work whilst his father owns a gaming shop which is in the same locality as the school. Matthew claims that he visits his father's shop frequently. Matthew is a

			very imaginative student and relates to cartoon characters all the time. On a number of occasions Matthew was observed pretending to be a particular cartoon character or superhero. He was also observed speaking to imaginary friends. His parents are aware of this and have explained that they also observe this behaviour at home. Matthew's parents also claimed that their son is so bombarded with the 'gaming word' that they fear that Matthew thinks he really lives in an imaginary world of video games.
Marthese	3.1	Maltese	Marthese is a very shy seven year old girl. Her mother is Italian and her father is Maltese. Marthese prefers to speak Maltese and feels proud that she can utter a few words in Italian. Marthese attends complementary lessons in English and Maltese and is given one to one attention. Her teacher explained that Marthese takes a long time to understand what she needs to do in class. Marthese enjoys using the computer but as the classroom observations suggest she barely gets a chance to use it because she normally takes so long to finish her school work tasks.

Isaaic	3.2	Libyan	Isaaic is an eight year old boy who was about to turn nine at the end of the research study. He joined Grade 3.2 in February. Isaaic left Libya and came to Malta with his parents and younger brother due to war. His older brother was however trapped in Libya. Isaaic continuously showed signs of anger with his peers and has also expressed his disappointment in seeing several people being killed in his home country. The school psychologist met Isaaic on a weekly basis. Isaaic could communicate in English with his peers and although he has never used a computer or tablet in his home country he learned how to use these in a matter of days.
Maria	3.2	Maltese	Maria is a very quiet girl. She is Maltese but prefers to speak in English. She is Hailey's best friend and they like to visit each other's homes after school. Maria's father is a learning support assistant and works in a local government school. Maria explained during one of the focus group interviews that her father normally helps her with the homework since her mother works longer hours.
Chris	3.1	Maltese	Chris is a seven year old boy who is fascinated by the world of video

			gaming. He is highly imaginative and likes to refer to fictitious characters in his writing. Chris is liked by his friends; he likes to follow rules and is always very obedient.
David	3.1	Maltese	David is a seven year old boy who likes using computers. He does his best to finish off his tasks at school in order to have more time on the class computer. David is described as a very calm, quiet and shy student by his teacher. David spends a lot of time with his older brother at home and he has also explained that he assists his brother with his homework even though his brother is a year older than him.
Steven	3.1	Maltese	Steven is an eight year old boy who likes school. He likes to compete with his friends and enjoys sitting for school tests. Steven continuously asks his teacher if they could watch YouTube videos or play an online game during break time. He is very alert, likes to tell jokes and seeing his friends laugh.
Amanda	3.2	American	Amanda came to Malta at the beginning of the scholastic year. This was her first time in Malta and although she was born in America she has lived in several countries prior to living in Malta. Amanda's mother is a lawyer and her

			father is an accountant. Amanda claimed that she was used to the blackboard at the school she previously attended. Her mother was worried that Amanda will not be able to catch up with the rest of the children since she was not exposed to a lot of technological devices at home. Amanda settled down very well in class and was capable of using technological devices as much as her Maltese friends by the end of the scholastic year.

Table 3.3: ***Brief information about the student participants***

Section 3.5.3 will provide more information regarding which students were present in each respective focus group interview. The background information of each student provided in Table 3.3 was provided by the students themselves either through the class observations conducted, during one of the focus group interviews or by the class teacher.

In order to have a better understanding about how constructions of reading and writing are changing within the digital age further data were collected from another two participants, Ms.Debono the Grade 3.1 class teacher and Ms.Vella the literacy teacher in the school. Ms.Debono is a very young teacher who has been teaching Grade 3 for three years whilst Ms.Vella has been teaching for over ten years. She started her career as a class teacher but started working as a literacy teacher after a few years. During the time of research Ms.Vella worked with the students in the early years – Grades 1, 2 and 3 whilst another literacy teacher taught students from Grades 4, 5 and 6.

During the interview itself the literacy teacher explained that her role is *"to evaluate each child's level of attainment, identify his or her needs and together*

with the class teacher and any other person involved with the child's development, draw up a plan of intervention to address the children's needs". Ms.Vella also explained that she provides in-class and withdrawal support using differentiated teaching and regularly assesses and monitors the progress of pupils. Ms.Vella also participates and contributes in formulating the school action plan for literacy.

During the scholastic year when this study was conducted Ms.Vella taught three students from Grade 3.1 and another three students from Grade 3.2 and through her sessions students were given individual attention in three forty-five minute sessions per week. During these lessons Ms.Vella conducted reading and writing tasks through fun activities and games in a small group setting. In addition to these sessions Ms.Vella gave in-class sessions and helped the three students from each class, within the classroom setting itself. Various research tools were used in order to gather data from the participants concerned. As the following section will show class observations and focus group interviews were conducted with the students whilst semi-structured interviews were carried out with Ms.Vella and Ms.Debono.

3.5 Research tools

The main data collection tools used were 'image-based' methods, focus group interviews, classroom observations and semi-structured interviews. Table 3.4 shows how data were collected over one scholastic year. It also shows that the scholastic year was divided in three sections.

Term 1 covered the period before the Christmas holidays, Term 2 covered the days before the Easter holidays whilst Term 3 is the last term of the scholastic year. Additionally, this section is then divided into four main parts. Each part will provide an explanation of why each research tool was chosen and how it contributed to the collection of the data.

It must be noted that each step in Table 3.4 impacted on the next. Whilst I had a tentative plan at the beginning of my research study, each step was specifically planned once the previous one had taken place. For example, the focus group interviews were always conducted after the class observations. In this way a

number when observations revealed a particularly relevant episode, this could be followed up in the focus group interviews.

Time frame	Targets
July 2014 – September 2014	• Met the head of school and assistant heads in order to discuss my research plans. • Spoke to Ms.Debono and Ms.Vella about the research and gained oral and written consent. • Asked for consent from all the Grade 3 students and their parents. • Conducted an introductory session with all the Grade 3 students.
October 2014 – November 2014	• Conducted two observations per month in class 3.2 and recorded the observations through field notes.
December 2014	• Conducted the first focus group interview with six students, three from each respective class • Transcribed the interview.
January 2015 – March 2015	• Conducted three observations in class 3.1 and two observations in class 3.2. All observations were recorded through field notes.
March 2015	• Conducted the second focus group interview with six students, three from each respective class. • Conducted a semi-structured interview with Ms.Debono and transcribed it.
May 2015 – June 2015	• Conducted two observations per month in class 3.1 and one observation in class 3.2. Observations were recorded through field notes. • Conducted the third focus group interview with six students, three from each respective class. • Transcribed the third focus group interview.
July 2015	• Conducted a semi-structured interview with Ms.Vella and transcribed it.

Table 3.4: ***Data collection time frame***

3.5.1 Image-based methods

It is said that 'a picture is worth a thousand words' and that images in research might be considered a very important tool especially when working with children. Thomas (2011) agrees, arguing that image-based methods can serve as an extension of observation and are a means of recording observations and eliciting

responses from the participants in any kind of case study. Image-based methods may take various forms: artefacts, photos, video recording and drawings are all image-based methods and all were used during data collection. These methods are not print-based but rather focus on the 'visual' and in turn can be regarded as a 'potential source of research information' (Denscombe, 2010, p.226). According to Schratz and Steiner-Loffler (1998) image-based methods are a great source through which the students' perspectives and 'inner-world' can be explored.

Given the ethnographic flavour of this research a number of photos were taken during the study. These were taken at various points throughout the study and were used for future reference or to support a particular finding. For example at the beginning of this study photos of each respective classroom were taken to provide the reader with a visual representation of what each class looked like. Photos were also taken to support findings, for example children working on tablets in groups during a 'free-time' activity. The photo provides evidence that when students are given the option to use their technological devices they preferred doing this in groups. Photographs and screenshots were taken and used for future reference, to support findings, for analysis and used alongside other research tools.

Drawings were also an important form of data. As Table 3.4 has indicated, in September an introductory session was conducted with all Grade 3 students. This was conducted in the school hall and the students were asked to bring their pencil cases along with them. The school hall was chosen for a number of reasons. The students were very familiar with the hall since they met there for assembly on a daily basis. Fun activities were also associated with the school hall as school concerts and annual activities were all held there, it was a space where all the students could work freely, in a comfortable space and environment.

One of the main aims behind the introductory session was to explain to students the purpose behind my research without influencing the data that would be collected. During this session the students were also told that parental consent has been given and I also asked the students for their own consent regarding observation of lessons. The students were told that through the process of data

collection a number of students will be chosen to participate in a focus group interview.

After this brief introduction the students were given an A4 sheet of blank paper and were asked to draw themselves during a reading and/or writing activity. The directions given to the students were quite open and students asked a number of questions such as *"Can I draw myself reading with some friends?"* and *"Is it okay if I draw myself at home?"* The students were told that they were free to draw whatever they wanted as long as their drawing shows themselves during a reading and/or writing activity. Some of the students' drawings are presented in the chapters which follow.

During this activity the students were encouraged to work on their own and share ideas only after the drawings were completed. In this way it was ensured that the students were not influenced by the ideas and drawings of others. At the beginning of this activity the students were also told that there is no right or wrong way to do the drawings and they would not be corrected in any way like all the other academic handouts which class teachers normally give out. This is why this activity was conducted in the school hall. As a researcher I wanted the children to feel comfortable and move away from the classroom context in order for them to understand that their work would not be assessed but rather discussed.

The main purpose of the drawing activity was to explore the students' perceptions of reading and writing and investigate whether technology would feature in their drawings as a means of carrying out reading and writing activities. Through the drawings the children's perceptions of reading and writing in relation to technology and what they value in their reading and writing environment was observed and analysed. Through this method a social scene was captured more quickly than note taking and drawings were also open for 'subsequent interpretation' (Thomas, 2011, p.166). Since the participants in this research were mainly children this method was used in order to gain more insight.

In sum it can be argued that all the image-based methods used in my study were chosen from Denscombe's (2010) table which is presented below. Table 3.5 shows that image-based type of sources can be sub-divided in three; still, movie and object. This study sought to strike a balance between the sources provided by Denscombe (2010) in Table 3.5. Video-recording, which Denscombe (2010) listed under the heading of 'Movie' was initially planned to be used whilst body signs and language were observed within the classroom setting as the next section will show.

Still	*Movie*	*Object*
Photographs, advertisements, drawings, graffiti	Video recording, archive film	Cultural artefacts, clothing and fashion items, built environment and places, body signs/language

Table 3.5: ***Potential sources of image-based documentary data***
Source: Denscombe, 2010, p.227

3.5.2 Classroom observations and field notes

In order to consolidate the image-based data gathered, a number of classroom observations were also conducted throughout the year. The definition of 'observation' in this context reflects that explained by Clough and Nutbrown (2008) as 'simply 'looking' – looking critically, looking openly, looking sometimes knowing what we are looking for, looking for evidence, looking to be persuaded, looking for information' (p.50). Observation was chosen because it draws on 'the direct evidence of the eye' and it witnesses events 'at first hand' (Denscombe, 2010, p.196).

As a researcher I was mainly interested in observing what really happened in the classroom context, how technology was being used to assist with reading and writing activities and how it influenced constructions of reading and writing. Through these observations I recorded students' attitudes and classroom environment where technology was being used. Additionally, I observed 'the

environment; people and their relationships, behaviour, actions and activities' (Cohen et al., 2010, p.67). At the beginning of the study a number of observation guidelines were formulated and these were used throughout the classroom observations. These are presented in Appendix A.

Denscombe (2010) refers to two types of observation in his work, systematic observation and participant observation. For the purpose of this research, participant observation was chosen because this type of observation is used by researchers to 'infiltrate' situations and to better understand the social culture of the groups being observed (Denscombe, 2010). Throughout this study the students were observed in a direct manner in their natural setting, that being the classroom. The type of observations conducted are what Clough and Nutbrown (2012) describe as 'structured observations with a schedule' (p.55).

Observations enabled me as the researcher to gain more reliable data because I was directly involved in the field of research. As Cohen et al. (2010) substantiate, data needs to be gathered in the natural setting of the participants because context is heavily implicated in meaning and observations serve as a helpful tool to gain data on real-life settings. Bailey (1978) identified some inherent advantages of observations arguing that: observation studies are superior to experiments and surveys where data are being collected on non-verbal behaviour. This is because the observation experience enables the researcher to 'enter the woodwork' and become 'invisible'.

The classroom observations were conducted in Grade 3.1 and Grade 3.2. Initially it was planned that two lessons per month would be observed in each respective class however Grade 3.1 was assigned a student teacher who replaced Ms.Debono for six weeks so I delayed my observations to the second term. As Table 3.4 showed, observations were therefore only conducted in Grade 3.2 during the first term. Observations can be conducted in an open or covert manner and I used both methods in each classroom. Before the observations took place, the children were told that I would be observing them at times of my research and I also made sure that the children and their parents gave their permission for this before the data were collected. It was highly evident that I was observing the children in Grade

3.1 because of my physical appearance in their classroom. This was not the case however when observations were conducted in my own class, Grade 3.2. The initial plan was to video record my own lessons however the students got very distracted every time they were filmed and so I abandoned this method and taught my lessons for the study before break time and wrote my field notes immediately after the lesson during the break.

Initially I thought of observing literacy lessons only, however, since reading and writing can be manifested in many subjects and technology supports reading and writing in other subjects too, observations were conducted in various subjects such as Religion, Mathematics and Science. Ms.Debono was always informed about the observations in advance and the observations took place during my free lessons, in other words during the time my students were given a lesson by one of the peripatetic teachers. In all, fourteen observations were conducted (seven in each classroom) and observations were stopped once the research reached the point of 'theoretical saturation'. Denscombe (2010) argues that when the new data confirms the analysis and nothing 'new' is added, the quantity of data is enough and this justifies the number of observations conducted for this study.

All observations were recorded through field notes. During the actual observations I jotted down important short notes and wrote up my more detailed field notes immediately after each lesson observed. Through the field notes I described the encountered event (observational notes) and formulated my own interpretation of the event (interpretive notes). Body language and facial expressions were also observed and noted in the 'interpretive section'. Reference to field notes was made to substantiate and elaborate on what the participants discussed at a later stage through focus group interviews. The field notes written were based on Spradley's (1980) checklist of field notes which is presented in Figure 3.3 below:

- Space - the physical setting;
- Actors - the people in the situation;
- Activities - the sets of related acts that are taking place;
- Time - the sequence of acts, activites and events;
- Goals - what people are tyring to achieve;
- Feelings - what people feel and how they express this.

Figure 3.3: ***Spradley's checklist of field notes***
Source: Spradley, 1980, p.312

Through the field notes the physical setting and the students' sequence of activities in the classroom were recorded and described in detail. The inferred feelings of the students were recorded and expressed through their facial expressions and body language. Figure 3.4 shows a sample of one of the field notes taken and includes details such as the day, date, time and subject taught. The descriptive notes describe the events which occurred whilst the interpretive notes recorded feelings and relevant observations but also thoughts and questions. These were typed in italics and were later addressed during focus group interviews or elaborated upon in other observational sessions.

Day and date: Monday 12/12/14

Time: 10.45 – 11.30 a.m.

Setting: In the classroom (class 3.2)

Subject: English (vocabulary and writing)

Resources used: Tablet, interactive whiteboard, internet access, flashcards, word document exercise

Descriptive notes	Interpretive notes
I have started the lesson by asking the children to tell me what month it is and which feast comes in December. The children explained that we are currently in the month of December and that during this month Christmas is celebrated. During this discussion I was asked by one of the students whether the tablet will be used during the lesson.	At the beginning of the lesson one of the students stopped me to ask whether the tablet will be used during the lesson. The student seemed very enthusiastic and when I explained that the tablet will be used all the children cheered with joy. This shows that the children look forward to using the tablet in class.
I asked the children to take out their tablet and on chrome type in the following URL: http//answergarden.ch/. I explained to the children that they are expected to brainstorm and insert any word which comes to mind when they think about the word 'Christmas'. I explained that they need to carry out the activity on their own.	The children showed signs of excitement whilst taking their tablets out. Some of the children had already taken it out before they were given the directions to do so. Students found no difficulty in accessing the internet. It was observed that they are all very familiar with the use of the internet and they all seemed to understand technical terminology such as 'chrome' and 'URL'. When the students were asked to write on the tablet they did not hesitate to do so even though they were aware that some of them were making a few mistakes. *Making mistakes - Is this different to when they are asked to write on paper?*

Figure 3.4: ***Field notes sample***

3.5.3 Focus group interviews

Vaughn, Schumm and Sinagub (1996) argue that through a focus group interview one is engaged in a conversation which addresses a particular topic in depth. In relation to this, Denscombe (2010) provides three important features of focus group interviews. According to Denscombe (2010) each focus group interview must have a *focus* based on an experience or knowledge which all participants have in common. In the case of my study the main focus was on three strands: digital technology, reading and writing.

Denscombe (2010) refers to the person who carries out the focus group session as the 'moderator' and argues that the moderator's role is to facilitate the interaction between the participants in the group. In this research I took both roles, that of a researcher as well as a moderator. Denscombe (2010) also emphasises the importance of the interaction within the group which is an essential feature of focus group interviews and in fact it was through this that information was elicited.

As Table 3.4 has shown, three focus group interviews were conducted throughout the scholastic year; these took place in December, March and June meaning that a focus group interview took place each term. Each focus group interview aimed to address a particular topic or questions. The main aims of each respective focus group interview are presented in Table 3.6. This shows that the main aim of the first focus group was to explore the children's views on their drawings and understand how they perceive themselves during a reading and/or writing activity. The second focus group addressed the participants' background information, their use and perceptions on digital technology at home and school and their perceptions on school life. The third and final focus group was more in depth and through this session the participants were asked to elaborate on their definitions of reading, writing and technology and how these are manifested within the classroom context.

As Table 3.6 shows, six students (three from each class) were chosen for each respective focus group. Three boys and three girls from the two classes participated in each session in order to have a balanced sample in terms of gender, and six students were chosen in total because this was a manageable number for

the group. This number meant that students could take turns in expressing their views without waiting too long for other students to finish what they were saying, so keeping the children's attention.

Number of focus group	Date and time	Main aim	Participating students
Number 1	Friday 5/12/14 1.45 pm – 2.15 pm	• Exploring children's views on the drawings they created. *How did students perceive themselves in the drawings? What do the drawings show? How do students define reading and writing through their drawings?*	Amanda Maria Hailey Chris David Steven
Number 2	Tuesday 24/3/15 1.00 pm – 2.00 pm	• Exploring the children's background and perceptions on school life, reading, writing and technology. *What do students understand by 'technology'? Do students use technological devices at home? How and why do they use them? Do they use them to conduct reading and writing activities?*	Antoine Josef Shanaia Matthew Marthese Isaaic
Number 3	Monday 1/6/15 9.45 am – 10.30 am	• Exploring children's definitions of 'reading', 'writing' and 'technology.' *How do students define 'reading' and 'writing'? What do they understand by these terms? Do students feel that technology is promoting new definitions of 'reading' and 'writing'?*	Shanice David Nathan Hailey Maria Alan

Table 3.6: ***Information about the focus group interviews conducted***

Denscombe (2010) argues that ideally focus group interviews should be conducted with six to nine participants. Given the age of the participants I opted for the smaller figure to allow for a fair range of ideas and experiences to be shared and to make transcription of the audio easier. Students who participated in the 'One Tablet per Child Pilot Project' were interviewed together with other students who

did not take part in the project. This was to ensure that students with different scholastic experiences contributed to the data. The participants selected for the focus group interviews were friendship groups and students felt confident to talk in front of one another; they took turns to speak and also shared ideas. As Table 3.6 showed, some of the students were chosen to participate in more than one focus group session.

Since I was not able to speak to students as much as I wanted to during the observations, I decided to conduct focus group interviews at the end of each scholastic term. The questions addressed in each focus group session moved in parallel with the observations conducted prior to each session. During the focus group sessions I elaborated on the observations and explored more deeply the students' thoughts behind the use of digital technology in order to read and write. Some of the questions asked during one of the focus group interviews are presented in Figure 3.5 whilst the full list of questions is presented in Appendix B. It is important to note that the questions presented in Appendix C were used as a guide rather than a structured list. As a researcher I allowed myself to be guided by the children's responses and therefore flexibility was key.

- Do you enjoy using technological devices? Why? Which is your favourite technological device?
- Do you use technology at home and school? Which technological devices do you frequently use?
- Do you feel that digital technology helps you learn? In what ways?
- Can you describe what do you do when you first get a new book from the library?
- Do the pictures help you understand what you are reading, or are they just nice to look at?
- If they do help, how exactly – what do you do with the pictures? Do you go back and forwards between the printed text and the pictures?
- Do you enjoy reading and writing? Through which means do you carry out reading and writing activities?

Figure 3.5: ***Some of the questions asked during one of the focus group interviews***

The reasons why I opted for focus group interviews were various. Through such a tool the chosen participants interacted with each other rather than with the interviewer; the students' views predominated and the data emerged from the interaction of the group. Another reason why focus group interviews were chosen as a means of collecting data was because they focus on the participants' reasoning and is a practical way to explore why participants hold the opinions they do (Denscombe, 2010). The latter factors could not be explored through the observations conducted and therefore the focus group interviews served as a means through which observations were confirmed, clarified and elaborated upon.

The focus group sessions facilitated the process for the participants to share ideas and experiences because they could relate and build on what other students were saying. Morgan (2006) also argues that focus group interviews promote the sharing and comparing of ideas and therefore through this process data are not simply provided on *what* the participants discuss and think but also *why* they provided such an answer. The focus group interviews conducted in this study however served as an opportunity to explore not only *what* and *how* questions but also *why*.

As Morgan (2006) states, the sharing and comparing of ideas may lead to two directions. The participants might come to some consensus and agree with the same point of view or they might explore significant differences among themselves. The following chapters will explore further how this was carried out. It can be argued that both scenarios presented by Morgan (2006) were present in the focus group interviews conducted and the output of the data gathered through such means will also be explored further in the following chapters. As a moderator I made sure that the students talked amongst themselves and they led most of the discussion.

Through the focus group interviews more than one response was gathered and as a researcher I was free to decide on the number and range of students involved in the research. Having chosen to work with six students in each focus group interview provided benefits in terms of the representativeness of the classes and a broad spectrum of views was covered. Setting up the focus group interviews was time

consuming and as the ‘moderator’ I ensured that the students remained focused on the topic discussed.

All focus group sessions were recorded through Audacity software and were then transcribed. Denscombe (2010) suggests that ideally focus groups should last between 90 minutes to 2 hours, as Table 3.6 showed the time of the focus group interviews varied from 45 minutes to an hour which is an appropriate length of time for the seven year old children. In order for the children to remain focused during the sessions it was ensured that the focus group interviews were as child-friendly as possible with prompts used to promote discussion and to motivate the students.

During the first focus group interview the children’s drawings were the main prompts used for discussion. For the second group interview the story of Little Red Riding Hood was presented in two forms, in the form of a printed book and e-book, and students had the opportunity to discuss differences, similarities and views on both resources. In the last session an image of an alien was shown to the children. Through this prompt the participating students were told that the alien lived in another planet and although he knew how to communicate in English and Maltese he did know what ‘reading’, ‘writing’ and ‘technology’ meant. Through this the students were encouraged to provide the alien with their definitions of the latter terms. Using prompts during the sessions proved to be positive because it encouraged discussion and also kept the students more interested in the session.

3.5.4 Semi-structured interviews

Whilst the focus group approach was used with the young participants, data from the adult participants were collected through interviews. The participants who were interviewed were the class teacher Ms.Debono and the school literacy teacher Ms.Vella. The teachers were chosen to be interviewed since they both worked with Grade 3 students and their input contributed towards understanding the phenomenon through different methods and points of view. This contributed to triangulation within the research.

Initially the interview approach was chosen since the teachers interviewed are my colleagues and I chose a method which has features similar to a conversation. Denscombe (2010) is critical of this and argues that the similarities between conversations and interviews are only 'superficial' and an interview is more than just a simple conversation. Denscombe (2010) continues by arguing that this 'superficial similarity' might encourage the researcher to have a 'relaxed attitude to planning' and preparation and thus it might fail unless there is good planning and 'a sensitivity to the complex nature of interaction during the interview itself' (Denscombe, 2010, p.173). Kvale (2007) does not support Dencombe's (2010) idea and relates interviewing to conversation explaining that:

> If you want to know how people understand their world and their lives, why not talk with them? Conversation is a basic mode of human interaction. Human beings talk with each other, they interact, pose questions and answer questions. Through conversations we get to know other people, get to learn about their experiences, feelings and hopes and the world they live in. In an interview conversation, the researcher asks about, and listens to, what people themselves tell about their lived world… and learns about their school and work situation, their family and social life (p.1)

Similar to the views of Kvale (2007), Cohen et al. (2010) also relate and combine conversations and interviews together to the extent that they refer to 'informal conversational interviews' in their list of interview types. Cohen et al. (2010) in fact outline four main types of interviews; structured interviews, unstructured interviews, non-directive interviews and focused interviews. To this, Denscombe (2010) adds semi-structured interview. For the purpose of this research I used a semi-structured interview guide approach which provided the participants as well as the researcher with more flexibility and freedom. Through this method as an interviewer I had a list of questions to be answered. As an interviewer I was also prepared to be flexible in terms of the order of the topics being discussed. Furthermore I could elaborate on aspects of interest which were related to the topic concerned. Since I knew the interviewees very well, the pace of the interviews

flowed well and although the questions were planned in a structured manner the interviews themselves had conversational elements.

This type of interviewing method was chosen because in this way the main questions were planned but others emerged from the immediate context and were asked in 'the natural course of things' (Denscombe, 2010, p.175). Although the classroom observations provided me with a clear vision about how students read and write in the digital age and how the classroom teacher and students relate to digital technology I felt the need to gain more insights and explore the participant's opinions, feelings and experiences. A structured type of interview was not chosen since I did not want the interview to resemble questionnaire methods. Furthermore with the semi-structured interview, I had a list of clear questions which were planned to be addressed and answered.

Figure 3.6 shows a few of the questions which were planned to be asked. As one can note the questions are open-ended since emphasis was made on the interviewee's points of interest. The full list of questions is presented in Appendix C.

- How would you define 'literacy' in the 21st Century? Do you feel that definitions of reading and writing have changed along the years?
- In your opinion do schools make the most of the technological advances of the 21st Century?
- Do you feel you use digital technology integrally in your everyday teaching?
- Do you believe that students are reading and writing differently now that they use digital technology in class?
- Which reading and writing methods do you believe students prefer to use in class?
- How is digital technology having an impact upon children's reading and writing of text?
- Do you believe that students are different learners due to technological advancement?

Figure 3.6: ***A selection of the questions asked during the semi-structured interviews***

Denscombe (2010) argues that generally speaking the aim of a semi-structured interview is that of 'discovery' rather than 'checking'. The semi-structured interviews conducted in this study served as a method where teachers' thoughts and insights were 'discovered'. At the same time however a few questions were asked to clarify some of the observations which were conducted in the classroom context.

The interviews were conducted on a one-to-one basis. Both interviewees were asked to choose a location and time where they would feel comfortable to sit for the interview. The first interview was conducted with Ms.Debono who invited me to her home. Ms.Vella's interview on the other hand was conducted in her classroom (the literacy room) and this was conducted within school hours. Ms.Vella had an afternoon off from school every week and during the same time the students of Grade 3.2 used to have peripatetic lessons. This gave me the perfect opportunity to conduct the interview, in a time which was convenient for Ms.Vella without interrupting her from her daily schedule.

The semi-structured interviews conducted took approximately 40 minutes each. Prior to the interview both participants granted me permission to record the interviews. Both interviews were recorded through Audacity software on my personal tablet. I ensured that another tablet was available as a backup. I transcribed the interviews word by word so that I use direct quotations from the participants in my findings. Audio-recording the interviews was very helpful. However, the transcription of the interview itself was very time-consuming, which Opdenakker (2006) regards as a major disadvantage for as Bryman (2001) confirms an hour of audio-recording can take about six hours to transcribe. A further disadvantage is that audio-recording captures speech but misses non-verbal communication (Denscombe, 2010). In order to make up for this I took very short field notes during the interviews then wrote more detailed field notes after each interview.

Since our mother tongue is Maltese, I was aware that the teachers might show concern and ask whether they will be interviewed in English or Maltese, so both interviews were conducted in Maltese and then these were translated directly from

the recording and transcribed in English. I felt it important to pay careful attention to the translation of the interviews in order to ensure correctness of the interpretation by ensuring linguistic flexibility and that the actual language spoken was not a limitation.

Denscombe (2010) argued that recording the interview might inhibit participants, whilst Gajendra and Kanka (1999) found that participants soon got used to being recorded. Keeping Dencombe's (2010) belief in mind both participants in this study were informed about the recording of the interview prior to the interview and gave their consent orally and in a signed consent form. The participants were also invited to go through the transcription of the interview and change any wording as they wished.

As Gajendra and Kanka (1999) suggest these processes were not taken 'lightly and never omitted' since they are 'for the benefit and protection of both the subject and the researcher' (p.127). Gajendra and Kanka (1999) further suggest that interview recordings must be kept in a secure and safe place and the transcriber must be 'trustworthy' and aware of the status of the materials which are being worked with. For this reason I did the transcriptions of the interviews myself, kept the recordings in a safe place and secured with a password. These will be destroyed and deleted once the thesis is published and work disseminated. An additional benefit to transcribing myself is that this is a good way to get to know the data.

Semi-structured interviews provided a number of advantages; they were quite flexible to organise and they also enabled me as the researcher to delve into the topics in more detail. A disadvantage which Denscombe (2010) mentions is what he regards as the 'interviewer effect'. There are various factors which might affect how the participants respond to the questions asked. Denscombe (2010) argues that one needs to consider factors such as the social status, educational qualifications and the professional expertise of the people interviewed. Interviewees might respond differently during interviews depending on how they perceive the interviewer (Denscombe, 2010). Gajendra and Kanka (1999) support Denscombe's (2010) argument and argue that during any type of interview much depends on the personality of the interviewer and the circumstances of the

interview to the extent that social relationships can 'contaminate the final product' (p.128)

The fact that I interviewed teachers who teach at the same level as myself might have also minimised the 'interviewer effect' as they felt that I could relate to their arguments and to some extent we work within the same level. Furthermore the fact that I interviewed two of my colleagues whom I know on a personal and professional basis might have also minimised the effect.

In order to ensure that the data collected were valid, data were checked with other sources. The interview data were not taken at 'face value' but as the following section shows, triangulation of data was used. Having mentioned the criticism of the interview approach one cannot ignore the fact that in their nature interviews are however 'wonderfully adaptable and flexible' (Gajendra and Kanka, 1999). In qualitative research interviews can also be considered as a practical way to understand the world from the participants' point of view (Kvale, 2007).

3.6 Triangulation of research

As the previous sections have shown more than one method of data collection was used throughout this research. In order to understand the context better and explore the main themes of the research in depth, data were collected from different stand points. Triangulation was used throughout the research and it can be defined as the use of more than two methods of data collection in any human behaviour study (Cohen et al., 2010). Denscombe's (2010) definition is similar to that outlined by Cohen et al. (2010) as he defined triangulation as the practice of viewing things from more than one perspective.

Denscombe (2010) further argues that there are various ways that the process of triangulation can be applied. These applications tend to fall into one of the five categories listed in Figure 3.7. In the context of this research, triangulation took place in more than one strand. The validity of the findings was checked through different sources of information and the data collected from the focus group and semi-structured interviews were compared to the class observations. Additionally,

the children's drawings were followed and combined with focus group interviews and thus triangulating the initial analysis.

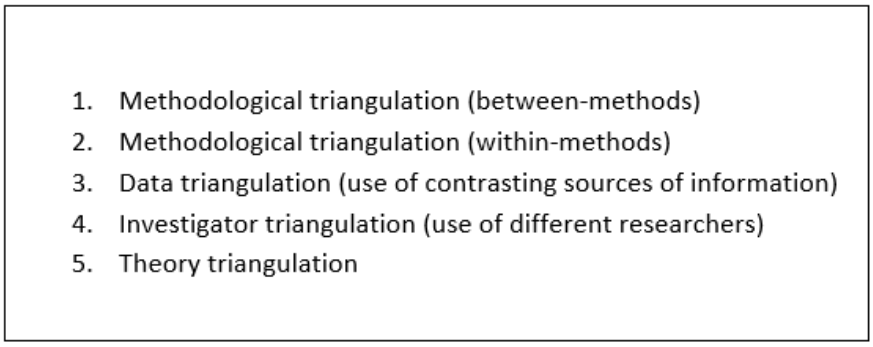

Figure 3.7: ***The five main categories how triangulation can be applied***
Source: Denscombe, 2010, p.346

Through this study methodological triangulation between methods was used in line with time triangulation. The data were collected from the same group at different points in time throughout the same scholastic year. Denscombe (2010) further suggests that different researchers can conduct the same type of research and the findings from different researchers can be compared for consistency. Due to the nature of this study this was not feasible. I could not refer to previous similar research since this study is quite 'new' in nature.

Triangulation in this research was used for a number of reasons. Firstly, triangulation was used to improve accuracy and to understand a fuller picture of the setting in which the data were collected. The justification for using triangulation in social research is that by viewing an aspect from more than one viewpoint the researcher can get a better understanding of it (Denscombe, 2010). Triangulation gave me added confidence in the research data and findings. The opportunity to verify findings and the chance to see things from different perspectives enriched the validity of the data. Through triangulation the data were more consistent and the possibility of error was reduced.

Cohen et al. (2010) agree that triangulation is not without its critics. Patton (1990) suggests that having multiple data sources might not ensure consistency or replication. According to Fielding and Fielding (1986) methodological triangulation does not necessarily increase validity or reduce bias in research. A

drawback of triangulation as described by Denscombe (2010) is that when triangulation is used data analysis becomes more complex. Consequently this brought the need to compare and contrast in a way which was more demanding. The section which follows will explain in more detail how this was carried out. Section 3.7 will also go through the data analysis methods used throughout this research.

3.7 Data analysis

Data analysis can be described as a process which separates things into 'their component part\s'. It 'involves the study of complex things in order to identify their basic elements' (Denscombe, 2010, p.114). To this Thomas (2011) adds that there are many ways in which data can be analysed. Data analysis can be described as a process which is needed in order to discover useful information whilst Thomas (2011) describes the analysis as the most 'important and enjoyable part' of the case study project (p.192). As has been previously explained, data were collected throughout a whole scholastic year. All the data gathered through the focus group interviews and semi-structured interviews were transcribed whilst the classroom observations conducted were recorded through field notes.

Once the necessary data were gathered and presented in a more manageable manner, the first stage of analysis involved the coding and categorizing of the data. This meant that as a researcher I assigned raw data to particular categories and looked for common themes. I planned to store data in a suitable program such as Nvivo however this was not used as the sample size chosen was not large enough and therefore the coding of data was carried out manually.

I initially started by open coding which Denscombe (2010) describes as labelling data in terms of their content. Additionally, I looked for links, similarities, differences and relationships between the codes. Following this step I then focused my attention on just the core codes. Creswell and Plano Clark (2007) present five main stages of data analysis which were used and followed throughout my research. These are presented in Table 3.7.

	Qualitative data
1. Data preparation	Cataloguing the text or visual data. Preparation of data and loading to software (if applicable). Transcribing the text.
2. Initial exploration of the data	Look for obvious recurrent themes or issues. Add notes to the data. Write memos to capture ideas.
3. Analysis of the data	Code the data. Group the codes into categories or themes. Look for concepts (or fewer, more abstract categories) that encapsulate the categories.
4. Presentation and display of the data	Written interpretation of the findings. Illustration of points by quotes and pictures. Use of visual models, figures and tables.
5. Validation of the data	Data and method triangulation. Member validation. Comparison with alternative explanations.

Table 3.7: ***The 5 main stages of data analysis***
Source: Adapted from Creswell and Plano Clark, 2007

Thematic analysis was the main approach chosen for analysis in this research. The thematic approach is a widely-used qualitative method and it primarily deals with the search for themes or patterns (Braun and Clarke, 2006). Braun and Clarke (2006) describe it as a method for identifying, analysing, and reporting patterns within data. The process through which this was done mirrors that presented by Braun and Clarke (2006) who suggest that in order for a researcher to do thematic analysis the research goes through six phases: 1) familiarising yourself with your data, 2) generating initial codes, 3) searching for themes, 4) reviewing themes, 5) defining and naming themes and 6) producing the report.

It was noted from the very start of the data collection that a number of themes were recurring and kept surfacing throughout the whole process of data collection. The transcripts and the field notes gathered were read a number of times and through this process I searched for meanings and patterns since it is only when data are transformed into written form that thematic analysis can occur (Braun and Clark, 2006). After familiarising myself with the data a list of ideas about what was in the data was listed. Braun and Clark (2006) listed this as the second phase of thematic analysis. Figure 3.8 shows an example of raw data which were taken

directly from the interview conducted with the class teacher. The bottom part of Figure 3.8 shows what this extract was coded for. This process was repeated for all of the data collected.

Teacher	I think technology is a strength… yes… definitely a strength… I mean as a teacher I have access to a lot of resources online… even when it comes to time management… in a classroom context for example you can easily look for something right there and then… sometimes you do not have to plan anything beforehand… you can use the Internet to look for images for example when one of the students does not understand a particular word.

1. Teacher regards technology as a strength.

2. Reasons for her answer: access to online resources, time management, facilitates the teaching process.

3. Images – reading of images, using images to explain the meaning of words.

Figure 3.8: ***Data extract and what it was coded for***

The coding of the data were carried out manually since the size of the data was not too large and this enabled me to manage the data quite comfortably. Short notes were written at the side of the raw data and coloured highlighters were used to group similar patterns. I felt more comfortable with this method and this has also been preferred by other researchers who argue that a set of highlighters can do the job just as well, 'if not better' than packages such as NVivo and Atlas.ti (Thomas, 2011, p. 173) for these also need some manual coding and decision making. Braun and Clarke (2006) stated that the third phase involves the sorting of different codes into themes. Separate sheets of paper were used to organise the data. Each theme was written at the top of the sheet and a brief description and data extracts were listed and organised under each theme. Each theme was then refined, reviewed and afterwards finalised and named. It can be stated that these categories or themes are important 'building blocks' of the analysis (Thomas, 2011) and the same themes were eventually used as sub-titles in Chapters 4, 5, 6 and 7.

The children's drawings were analysed in the same way. Each drawing was examined to identify emergent and common themes. One of the key factors in

analysing drawings is to consider the features which are given most importance by the children (Bland, 2012) and therefore the most prominent features were noted. Each drawing was coded by its content and it was observed that a number of themes were common in all the drawings. Each theme was further divided into sub-themes whilst listing the most common content first. Amongst the common themes and sub-themes were the following:

- Physical environment (classroom, garden, library, school yard, home)
- Participants (teacher, the student himself/herself, friends, family relatives)
- Resources drawn (books, copybooks, pencils, pens, interactive whiteboard, tablet, computer)
- Use of digital technology (interactive whiteboard, tablet, computer)
- Other themes (love for reading/writing, individual reading, leisure reading, educational reading).

These themes, which emerged from the drawings were than integrated into the themes presented in Chapters 4, 5, 6 and 7 formed a basis for presenting the findings. The following section will discuss ethical issues and how they were addressed. Section 3.8 will describe the process of how consent was gained from all the participants in this study.

3.8 Ethical considerations

> If social research is to remain of benefit to society and the groups and individuals within it, then social researchers must conduct their work responsibly and in light of the moral and legal order of the society in which they practice. They have a responsibility to maintain high scientific standards in the methods employed in the collection and analysis of data and the impartial assessment and dissemination of findings (Mertens and Ginsberg, 2009, p.13).

As Mertens and Ginsberg (2009) state, prime importance needs to be given to ethical issues. Denscombe (2010) regards research ethics as an 'over-riding concern' when it comes to the choice of strategy' (p.7) whilst Thomas (2011) states that ethics are principles of conduct about what is right and wrong. Thomas (2011)

continues by arguing that ethics is a 'specialised' and 'increasingly important topic' and all universities have detailed procedures for ensuring that ethical considerations are taken by researchers (p.71).

The researcher needs to ensure that the participants concerned are in 'no harm'. For social research, the researcher also needs to guarantee that the participants remain anonymous, data will be treated as confidential, participants understand the nature of the research and their involvement and participants voluntarily consent to being involved (Denscombe, 2010, p.7). Furthermore researchers should act 'professionally and with integrity' (Denscombe, 2010, p.7) This concept is also explored in the document 'Research Ethics: General Principles and Statements' by the University of Sheffield (2015) which explains that the 'paramount principle governing all University of Sheffield research involving human participants' is 'respect for the participants' welfare, dignity and rights' (p.1). Keeping these in mind Thomas (2011) proposed a list of reflective questions which I asked myself and which guided me in my research;

- Who is the research benefiting?
- Do you have the right to take up people's time and energy?
- Is there any possible discomfort that participants will have to experience?
- Are you invading participants' privacy?
- Are you diminishing or compromising your participants' standing, of whatever kind, in their communities? (p.69).

Clough and Nutbrown (2008) argue that 'all research must be interrogated for the means by which it 'protects' the interests of the participants. Researchers make their own decisions about how their subjects' 'confidences' are protected in the reporting of the research' (p.96). For this reason, since the participants are seven and eight year old children, consent was gained from their parents and the children themselves. Consent in this context can be described as an agreement given by the participants who in turn agree to take part in a study (Thomas, 2011).

Ethical approval from the University of Sheffield was obtained prior to the start of data collection and a copy of the document received is attached in Appendix D.

After gaining approval from the University of Sheffield, at the beginning of the academic year oral informed consent was obtained from the head of school and the assistant heads. The parents of the students who were in Grade 3 during the time of data collection were also informed about the research. At the beginning of each scholastic year the head of school organises a parental meeting and during this meeting all parents were given a copy of the consent form and a covering letter. The parents were asked to take the documents home and once signed their children returned them to school.

The covering letter informed the parents that the research is about the impact of digital technology on children's reading and writing of text. The covering letter also explained that as part of my research I would be conducting a number of classroom observations and short interviews with a selected number of students who were in their third grade. It was made clear to all parents that throughout the writing of the thesis all the names of the children would be anonymised. The parents were also informed that the chosen students would be recorded during the interview and the audio recordings of the interviews would be used only for analysis and for the purpose of the thesis.

During the first parental meeting parents were given the opportunity to ask me questions if they wanted and they were also told that all the information collected would be treated as confidential. Attached to the covering letter the parents were given a consent form through which they were asked to tick, sign and confirm that they have read the covering letter and agree with its content. The consent form was also signed by the head of school. All parents in both classes gave their consent and some also signed the documents and gave them to me during the parental meeting itself. The students themselves were asked for their consent. Since the children who participated are quite young they were presented with a booklet instead of a formal letter. A copy of the booklet is presented in Figure 3.9.

Figure 3.9 shows that the inside of the booklet is divided in two main parts. On the left hand side of the booklet the students were presented with a letter which briefly explains the purpose of the research. The letter was written in very simple English so all the children, including the international students, could relate to it

and understand its content. On the right hand side the students were asked three simple questions and to circle the correct figure to indicate their response. In this way all the students were asked whether they found any objections in taking part in the research and whether they agreed to being recorded at any time during the process. The students were also told that they could withdraw from the study at any point in time. In addition, I gave the students the option to tell me, their class teacher or their parents if they did not want to participate or wanted to withdraw from the study. I thought that being able to withdraw by telling their parents would help as children might feel more confident opening up to a parent rather than their teacher. This was done in order to ensure that there were not any power imbalances between me as a researcher and the children.

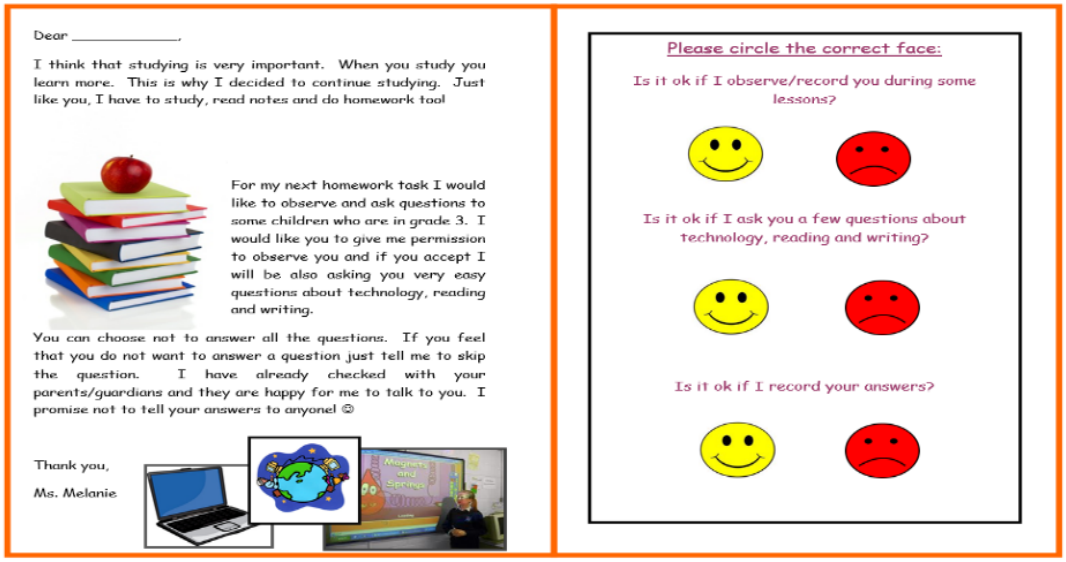

Figure 3.9: ***Consent booklet presented to students***

The adult participants who took part in this research were presented with a covering letter and a consent form to sign. The covering letter gave brief information about my research and invited the teachers to take part in the research. The teachers were told that if they agreed to contribute to the research they would be interviewed and this would be recorded for transcribing purposes. The letter explained that they could withdraw from the study at any point without providing any reasons. This was presented in writing and face-to-face. Teachers were also invited to ask questions and express any concerns.

Attached to the covering letter was a consent form through which the teachers were invited to tick in agreement and then sign. Through the ticking of the boxes the teachers confirmed that they have read and understood the letter provided, agreed to taking part in the research project, understood that their participation is voluntary and that if they felt the need to complain they should do this in the first instance by contacting me or my tutor. The contact details of my tutor were also presented in the consent form. The participating teachers understood that any identifying information would be anonymised before analysis and that the recorded data were securely stored and deleted after its purpose.

3.9 Conclusion

This chapter has discussed the methodology behind this research study. It showed that for the purpose of this qualitative research study various research tools have been used. The young participants were invited to draw and were also observed during a number of lessons whilst the adult participants were interviewed through a semi-structured interview. The data were analysed through a thematic approach and the limitations encountered throughout the journey of this research were also explained in this chapter.

Following an understanding of the tools used in order to carry out this research are Chapter 4, 5, 6 and 7 which present the findings, a discussion and analysis. Most of the themes which were derived from the raw data were eventually used as sub-headings in the chapters which follow. The following four chapters will examine in detail the findings gathered from the observations, children's drawings and interviews with the children and the teachers. These are all presented in a context which is quite 'new' within the Maltese educational system since Maltese classrooms are shifting towards new ways of teaching and learning in the 21st Century.

As this chapter has shown great thought and care was given to the type of approach and research tools chosen and which were deemed fit to this type of study. Furthermore time was dedicated towards selecting the appropriate methods of

analysis and the way the research will be presented. After all, as Thomas (2011) argues:

> The quality of a case study depends less on ideas of sample, validity and reliability and more on the conception, construction and conduct of the study. It depends on your initial idea, the ways that you choose your case, the thoroughness with which you describe its context, the care you devote to selecting appropriate methods of analysis and the nature of the arguments you deploy in drawing your conclusions (p.71).

This chapter has discussed and justified the research methods used in the study reported in this thesis. The next chapter will explore the students' and teachers' perceptions in relation to reading and writing.

CHAPTER 4

Perceptions of Technology in Relation to Reading and Writing

Chapter 4: Perceptions of Technology in Relation to Reading and Writing

4.1 Introduction

Chapter 3 explained in detail how data were analysed. As a researcher I familiarised myself with the data and generated initial codes. The themes which emerged were reviewed and then formed sub-titles within these findings chapters. Examples of some of the themes which emerged through the analysis were the following: collaboration, interactivity, 'trial and error', popular culture, reading of images, 'fluidity' and multidirectionality. The sub-themes were further divided under four main headings which were chosen as chapter titles for Chapter 4, 5, 6 and 7. Every chapter presents the main findings, a discussion and analysis.

This chapter focuses on the participants' perceptions of technology in relation to reading and writing. The initial section of this chapter examines the students' attitudes towards school and their views on digital technology. This is followed by Section 4.3 which explores the students' and teachers' views on the role of technology in reading and writing in the classroom. The last section deals with the advantages and disadvantages of reading and writing through digital technology as expressed by the teachers and students.

4.2 Students' attitudes towards school and the importance of popular culture, reading and writing

At the beginning of the collection of the data the chosen participants had the opportunity to express how they felt about going to school. This was important to study in order to familiarise myself more with the context being studied. In addition, this was also important in order to explore whether students would identify reading and writing as an important aim of schooling. During the first focus group interview the children were specifically asked whether they enjoy going to school and to provide reasons for their answers. Six students participated in this interview; Amanda, Maria, Hailey, Chris, David and Steven aged six and seven. More information about these participants was provided in Table 3.3 in Chapter 3.

Amanda, Maria and Hailey did not hesitate to explain that they loved going to school and that they looked forward to it. David and Chris reported that they did not really like to go to school whilst Steven explained that he had mixed feelings. David and Chris argued that they did not like attending school because they did not like studying and following rules. Additionally, they reported that they did not like school because sometimes they had a lot of writing to do. Chris went on to state that he did not enjoy school "*because we have a lot of studying... because we need to study a lot for the tests and the teacher gives us a lot of homework... we have to write a lot of homework afterwards which can be very tiring".* In response to the same question Chris also reported that he did not like to go to school because according to a character from the Disney movie 'Toy Story', *"there is no place like home!"* David continued by stating that sometimes he hated when his teacher chose educational videos for them to watch.

During the winter season when the students could not go out to play in the school yard, due to bad weather, teachers had the tendency to show the children a video or DVD on the interactive whiteboard. David explained that he continuously brought DVDs from home to watch at school such as the Disney movie 'Cars', but the teacher did not let the children watch them because she stated that they were not educational. The same student also explained that sometimes he wanted to take a particular toy to school but his teacher did not allow toys to be brought to school either because it broke one of the school policies.

Episodes such as these made David frustrated, to the extent that this is the reason he gave for not liking school. This scenario showed that media that are meaningful and engaging for David were not recognised in school, on the grounds of them not being regarded as 'educational'. In relation to this, similar findings have shown that popular media culture is often perceived in a positive way by parents but is often banned from early childhood classrooms (McNaught, Clugston, Arthur, Beecher, Jones Diaz, Ashton, Hayden and Makin, 2001; Boyd, 1997).

Data from this study shows that popular culture is manifested in the children's lives and this was evident from the students' early responses about school life. Popular culture is regarded as very important to students to the extent that in order to answer

the question about whether he enjoys going to school, Chris referred to a cartoon character from 'Toy Story' to support his argument whilst David complained that he cannot watch the DVDs he wants and cannot bring toys from home. This shows that popular media culture has a central role in these children's lives. The literature supports this notion, demonstrating that many young students are highly exposed to the world of media even before they start going to school (Marsh, 2005).

Data gathered from the first focus group interview revealed that the children made a clear distinction between what was perceived to be 'educational' and what was not. For example Chris reported that the film 'Cars' was not appropriate for the school environment because it was not 'educational'. Chris further reported that this was a school policy and one of the *"school rules"*. Further through the interview Chris stated that not all videos are educational. He reported that most Disney movies are not educational whilst he explained that the episodes of 'Barney' are more educational *"because you actually learn something from it"*. This shows that this particular student distinguished between what he perceived to be educational and non-educational videos.

Furthermore, data showed that there is an inconsistency between the out of school literacy which students are exposed to at home and the schooled-literacy. This situation also seems to be mirrored in England where the literature shows that digital practices are not integrated between out-of-school and school settings (Marsh, 2008). The literature shows that students learn more when their popular culture interests are recognised (Evans, 2004) so that there is a connection between the digital literacy skills practiced at home and school. The importance of the continuity between home and school has also been emphasised through reference to 'third space theory' in the literature (Levy, 2008). The third space in this study is the space in between the literacy discourses of home and school and Levy's (2008) work has showed that this can be an 'uncomfortable' space for some children when there is a lack of continuity between the two.

Moreover in order to ensure that schools make the best use of the students' 'funds of knowledge' (Moll, Amanti, Neff and Gonzalez, 1992) schools need to consider and understand the children's background which they bring to school (Marsh,

2005). Studies such as those conducted by Marsh (2005) reveal how central material objects are for young children and how such media objects like those described by David might act as 'soothers' and facilitate the transition from home to school (Marsh, 2005). This stems from Winnicott's (1971) work on transitional objects and attachment.

Observations further revealed that both teachers did not mind that students played games on the computer or tablet as long as they have finished the reading or writing tasks given. The fact that teachers allowed the children to 'play' on the computer once they had completed their reading and writing suggests that technology was not considered to be part of reading and writing. The analysis of data revealed that there were times when teachers accepted the link between popular culture and digital technologies mostly when these were used for leisure purposes. A number of students in fact were observed playing Disney and Nickelodeon games during break time and at no point was there any interaction from the teacher. All students agreed that they enjoy playing online games at school even though this does not occur frequently.

When the students were asked to elaborate on why they go to school, they all agreed that although they *"must"* attend school because it is compulsory they feel that attending to school is also a *"need"*. The children's responses were all very similar in this respect. They explained that as children they need to go to school to learn to read, write and study. Alan explained that school is important because if he learns to read and write it will eventually help him *"get a good job in the future"*. The students interviewed also explained that they attend school because they need to learn languages, mainly English and Maltese, as well as Mathematics. All students agreed that they like *'learning'* even though they might not necessarily like going to school.

This supports the Malta National Minimum Curriculum (1999) which claims that 'students consider the learning process to be relevant when they realise that learning, in terms of both content and method, helps them throughout their life' (p.25). Data from this study has therefore showed that these children bring popular culture into their own definitions of reading and writing, but this is not recognised

by the school discourse as being part of 'learning'. It can be argued that the students' comments support the aims of the curriculum however there is a tension in what is meant by the term 'learning' – and indeed learning to read and write.

Chris and David reported that there were other aspects which they liked about school life. Chris, David and Steven agreed that they enjoyed playing with their friends during break time and that they liked to participate in fun activities such as art, crafts and music. Chris, David and Steven also explained that they preferred non-academic lessons such as art, physical education, drama and using the computer as opposed to reading, writing and mathematics lessons. All students expressed their belief however that they found that all the subjects taught at school were equally important because they all contributed to learning.

In this sample, students who reported that they enjoy going to school were all girls. Amber explained that she enjoyed going to school because when she grows up she would like to become a teacher whilst Amanda explained that she enjoyed attending school because she got to do a lot of fun things. Maria provided a different perspective and reported that she enjoyed school so much because she learned a lot; *"I get to learn a lot... I learn to read and write... and this is very useful for my future... my mummy says".*

In sum this is showing that many of these children feel that 'school' is about 'reading and writing' and that a main purpose of going to school is to learn to read and write. The boys claimed not to like this as much as the girls which is consistent with the literature (Younger and Warrington, 2006). However what is clear from the outset is that digital technology and popular culture are not viewed as being 'educational' and are not perceived as being part of 'reading and writing'. I explored this concept further in the next drawing-based activity.

As Chapter 3 showed, apart from being asked about their attitude towards school all Grade 3 children were asked to draw themselves during a writing and/or reading activity. All the drawings showed happy faces and children drew themselves in a 'happy setting'. There was only one student who expressed negative feelings towards school life. This student who was also assisted by a learning support

assistant in Grade 3.2 showed this by choosing to draw his face rather than himself reading or writing because he said "*it is nicer to see a drawing of myself rather than drawing myself reading lots and lots of boring books in a boring place".* This drawing is presented in Figure 4.1 below:

Figure 4.1: ***Student's drawing***

Initially, the students were asked to share their attitudes towards school in order for me to make them feel comfortable and introduce them to the focus group interview. However, asking students about school life has revealed important data. Early findings from this study have shown how popular culture is manifested within the children's lives and how the teacher's and school's discourse has influenced their views on what is considered as educational and non-educational within the school setting. Observations also revealed that although figure toys and DVDs could not be brought to school, students could still 'access' popular culture through digital technologies in the classroom.

In conclusion, this section has shown that students' ideas were influenced by the school discourse. Episodes such as those described in this section revealed that technology was not considered to be part of reading and writing. The analysis of data further revealed that popular culture was also not viewed as being 'educational' and part of 'reading and writing'. The next section will examine the teachers' and students' views on the role of digital technology in reading and

writing in the classroom. Furthermore, the following section addresses and answers the second research question behind this study and it also provides the reader with background information about the students' and teachers' views on digital technologies.

4.3 The students' and teachers' views on the role of technology in reading and writing in the classroom

During one of the focus group interviews the students present were provided with the 'alien scenario'. Students were asked to explain to Zanu the alien what they understood by the word 'technology'. Some of the definitions are outlined in Figure 4.2.

> *"It's all the electric things which work... at home... at school... everywhere basically... electric stuff... like a radio station, a computer... a gas station... traffic lights" (Antoine)*
>
> *"All things which work with electricity – like a toaster, a computer" (Josef)*
>
> *"Erm... I don't know what technology means to be honest" (Isaaic)*

Figure 4.2: ***Students' definitions of 'technology'***

A common term which was recurring in the students' definitions of technology was the term 'electricity'. According to the students interviewed 'technology' is a broad term which includes all those devices which work with electricity. Figure 4.3 presents a list of devices which the students mentioned and which they regarded as technological devices.

Figure 4.3 shows that the students were very aware that technology is all around them and as Marsh (2005) has stated children at home are engaged with different types of technologies. As Antoine explained technology is found at home, at school and everywhere and the list provided by the students shows examples of different technological devices some of which are not necessarily used by the children. Isaaic explained that he did not know what the term 'technology' meant

but as soon as he heard the other students mentioning examples of technological devices he was quick to add some to the list himself.

Figure 4.3: ***List of technological devices students listed as examples***

During the same focus group interview which was conducted with four boys and two girls, the students were asked which technological devices they used at home. All the boys interviewed (Antoine, Josef, Matthew and Isaaic) explained that they used various gaming devices. Amongst the devices owned were the PlayStation 1, 2, 3 and 4, PlayStation Vita, Xbox 360, Nintendo and the Wii. It was interesting to note that all the students owned more than one gaming device. Matthew – whose father owned a gaming shop – explained that he is the owner of a *"computer, ps4, Xbox 360, Wii and my very own tablet".* This raises some interesting issues with regard to ownership as now discussed.

The students in this study reported that through on screen activities they created their own unique texts and therefore 'own' their work. The term *"very own"* shows how personal these devices are and the look in Matthew's eyes confirmed how proud and happy he was to be the owner of such a long list of devices. Marthese also stated that she loved using her Nintendo whilst Shanaia explained that she sometimes played games on her mobile or tablet and she did not own any gaming devices because *"there are only girls at home"*. It was interesting to note the connection Shanaia made with gaming devices and the masculine gender. Her argument that gaming devices are designed for boys was expressed in a very direct manner and although she agreed that girls can play games as well as boys, according to Shanaia girls normally play games on a computer, mobile phone or tablet and not on a gaming device.

Through the discussion it was shown that the world of gaming is highly present in the lives of these students. Apart from gaming devices, the students also mentioned that they enjoy using the computer, the tablet and their mobile phones; in addition they also reported that they loved watching television. This finding is supported by the literature which shows that the availability of such digital technologies is encouraging children to interact with the digital world before they enter school (Orlando, 2011).

Further through the interview the students were asked to choose their favourite technological device. These are presented in Figure 4.4. From the list gathered in Figure 4.4 it can be noted that most students enjoyed playing games and using gaming devices. Matthew also made use of the term *"my very own"* again which emphasises how personal these devices are to him. The students also explained that they spend a lot of time playing video games, using the computer and the tablet. Every student in the group explained that after school they all start working on their homework and then they spend the rest of time on the computer, tablet or playing games. Only two students engaged themselves in extra-curricular activities. Antoine and Josef explained that they had football lessons twice a week and when they were not playing football with their friends they normally played football games at home.

*"My PS3… I get to play a lot of games" (*Antoine)

"My PS4" (Josef)

"Definitely my mobile and tablet… I cannot choose between the two" (Shanaia)

"My PlayStation 3… it's my very own" (Matthew)

"Tablet and PlayStation 3" (Isaaic)

"My tablet and my Nintendo" (Marthese)

Figure 4.4: ***Students' favourite technological devices used at home***

The students could not identify exactly how much time they spent using technology at home however Josef explained that he used the tablet for an hour and the PlayStation for another hour. Josef continued by explaining that he had a lazy eye

and the doctor ordered for him to wear an eye patch for two hours a day in the afternoon and therefore his mother timed his activities. Although the students could not identify the exact time they spent using technological devices they explained that they dedicated a lot of time. This was expressed through terms such as; *"a lot", "till mum tells me to stop"* and *"till my eyes hurt".* Most children also explained that their parents often told them when and how long they could use technological devices. The same was found in Pahl's (2005) study about console games where parents regulated game playing time and also set particular time frames when playing was allowed.

Further through the interview the students were also asked whether they felt that digital technological devices helped them learn. At the beginning of the focus group interview most students agreed that technological devices did not help them learn in any way. This data shines light on the children's perspectives on learning and the dominance of the school discourse in terms of the children's beliefs about what constitutes learning. After a lot of discussion, during the same focus group interview the students came to agree that they can only learn through technological devices if the activities carried out are educational.

When students were asked to elaborate on what can be defined as educational, they reported that 'educational activities' are those topics that are covered in school. Antoine and Josef for example both distinguished between educational and non-educational games. Josef explained this by saying, *"... because if you have a game that will help you learn you will learn but if you have a game which is not meant to make you learn you will not learn".* Shanaia also agreed with Antoine and Josef and provided an example on her use of the mobile phone; *"Well I have some games on my mobile phone which are educational. I learn a lot from them but then there are games which I learn nothing from".*

All the students portrayed the same argument when accessing the Internet and YouTube. Isaaic argued that YouTube and the Internet can prove to be very educational but it all depends on the topic researched. Isaaic was asked to define which topics can be considered as educational and his answer shows how the school discourse affects what the students consider as educational or non-

educational; *"for example if you watch a video about old shops found in Valletta…. like the one we watched in class… that is educational… even for example, videos on fauna and flora…those are educational… we've learned about those during Social Studies lessons but for instance… Minecraft… if you watch YouTube videos on how to play Minecraft… that is not educational… it's not really related to stuff we did at school".*

Isaaic agreed with Antoine, Josef and Shanaia's argument that the user of the technological device is the person responsible in choosing whether to engage himself or herself in an educational activity or not. The students who owned a PlayStation or any other form of gaming device explained that such devices can never be used for educational purposes because the games in themselves were created for leisure purposes. Antoine provided a practical example by stating that he played the FIFA game several times during the week. He continued by explaining that through the game he learned more about football and how the game is played but he learned nothing that can be considered as educational.

In addition to the use of console games and virtual worlds on computers and tablets, students made constant reference to the use of their mobile phone. All students confirmed that they own a mobile phone. Given that these children were seven or eight years old at the time of data collection, they were in fact significantly younger than those studied in Algeria, Egypt, Iraq and Saudi Arabia, where it was found that children were most likely to receive their first mobile phone at ages ten (GSMA, 2014). Three students who participated in the corresponding focus group interview reported that they got a smart phone as a gift, whilst the other three students explained that they got a basic or feature phone which one of their parents or relatives did not use anymore.

From the children's discussion on the use of such digital devices it was noted that they continuously distinguished between educational and non-educational activities. They explained that educational activities can be carried out on the tablet, the computer or smart phone however gaming devices such as the Wii, PlayStation and the Xbox are only used for non-educational games. This was further emphasised by the students when they were asked to explain which

resources help them learn. Amongst the resources the students mentioned *"books, pencils, rubbers, sharpeners and the copybooks".* It was only when the students were asked which technological resources help them learn that they mentioned; *"the interactive whiteboard, the computer, the tablet and the television at home".*

The responses from the students showed how much students regard learning, reading and writing as being traditionally orientated. The students reported that what happens in school is 'learning' and this can be valued as 'educational' but activities such as 'computer games' that do not feature in the curriculum are non-educational and therefore not of value. Data from this study revealed that the school discourse dominated constructions of what is valuable and this raises questions about the ways in which reading and writing are valued. Additionally, this study has revealed that digital technology is changing the way that students read and write which is consistent with the literature presented in Chapter 2 (Morgan, 2011; Burden, 2002). Policy makers need to be aware of this and need to understand this in order to support how children are reading and writing now. The next step would then be to help schools and educators to acknowledge this.

The role of digital technology in reading and writing was also discussed by the teachers who were asked whether they felt that schools made the most of recent technological advances. According to both teachers Malta tends to lag behind other countries in this respect. It is well known that in Malta digital technological devices seem to enter our classrooms at a later stage in comparison with other countries such as the United Kingdom and the USA. This was expressed by both teachers and Ms.Debono also provided a few examples to support her argument.

Ms.Debono explained that Maltese teachers were given the laptops quite recently while the interactive whiteboards were incorporated in classrooms in 2010 when in reality Maltese teachers had already heard about this resource being used in other countries. The same applies to the use of tablets in class. Other countries such as Canada, United Kingdom and the USA have been using tablets for quite some time (Thomas and Cutrim Schmid, 2010) whilst Ms.Vella reported that "*whilst foreign countries are researching the impact of the tablets in schools, in Malta we have*

just conducted the pilot project and tablets will eventually be used in September 2016!"

Ms.Vella believed that most teachers would adopt technology further if they were provided with the latest technologies claiming that; *"schools in Malta are not equipped with the latest technologies"*. Ms.Debono had also mentioned this. Both teachers further referred to the pressure from the Education Division for the country to stay updated with the latest technological advancements but at the same time pointing out that teachers are rarely given the opportunity to express themselves and decisions are normally being taken from a top-down approach. This concern was also raised in the literature. Evans (2004) for example believes that over the years technological resources are added to a traditional educational structure that is becoming something like 'Frankenstein's monster'.

Ms.Debono and Ms.Vella both argued that although digital technology can be beneficial it also brings a number of constraints. Ms.Vella believed that there is so much going on in schools and teachers are so overworked with paper work that it is impossible for them to make the most of technological advances even when these are available. Amongst the drawbacks mentioned, Ms.Debono explained that issues of time management and technical difficulties are the prime two main setbacks. Ms.Vella agreed and also mentioned that she faced a number of technical difficulties whilst admitting that she felt that she did not use technology integrally in her everyday teaching because she faced many technological problems which were out of her control and which eventually hindered her teaching.

Ms.Debono on the other hand explained that she did not use the technology in all the subjects taught. Ms.Debono used the technology during Maths and English lessons but when it came to the teaching of Maltese she found that Maltese resources were very limited to find unless the teacher herself produced them. Ms.Vella expressed her concern that there was lack of human resources in Maltese schools and that *"it is quite stressful for the teacher to file a technical report and wait for a whole week for a technician to fix the fault".*

After having mentioned all the drawbacks both teachers explained that technology brought more advantages rather than disadvantages. The teachers believed that most pupils thoroughly enjoyed it when technology was being used in class and that students loved it even more when they were the ones using the technology. Ms.Vella explained that *"on the whole technology in the classroom is a strength given that teachers are equipped with the latest technology, good Wi-Fi and latest laptops."* Ms.Debono who used the Fronter website frequently also explained that a prime advantage technology brings is the fact that whatever is done in class can be easily uploaded on ilearn and at home students could revise what they have learned at school.

Furthermore these teachers reported that technology has proved to be a strength in that it has facilitated the lesson preparation process. Ms.Debono elaborated on this by stating that *"I mean as a teacher I have access to a lot of resources online... even when it comes to time management... in a classroom context for example you can easily look for something right there and then... sometimes you do not have to plan anything beforehand... you can use the Internet and look for images for example when one of the students does not understand a particular word."* It is interesting to note that Ms.Debono referred to 'time-management' as a drawback and advantage at the same time. In her last comment she explained that digital technology tends to make things easier for the teacher's lesson preparation but at the same time once the technology did not work as expected it promoted a lot of constraints and a lot of time is lost.

The teachers interviewed believed that teaching through digital technology involved the students more since they were active learners rather than passive listeners. Ms.Debono reported that the students' attention span was increased when teaching was done through a technological device because it was something which they could relate to. According to Ms.Debono, students of the 21st Century *"are born in a technological world and it is the only world they know of."*

The interviewees further expressed their belief that the style of teaching has changed in the 21st Century classroom and that digital technology should be part of the *"teacher's professional tool box."* In Ms.Vella's own words; *"through*

technological devices we are keeping our pupils at pace with society and preparing them for their roles in society. Teachers' teaching aim has become to design meaningful learning experiences that embed technology". Amongst the answers provided Ms.Vella and Ms.Debono both agreed that students are now learning to read and write in a *"fun way".* Both teachers also mentioned that the use of multimedia interests the students more and is a feature which they got used to. Ms.Vella used technology for reading lessons and writing, when she introduced sounds and letter formation, tricky words and sentence structure. Ms.Debono unlike Ms.Vella used digital technology for reading lessons whilst *"the children's writing tasks were always limited to the copybook".*

Given that both teachers agreed that in the long run the use of digital technology has more advantages than disadvantages both teachers also agreed that it did not necessarily mean that technology improved the students' literacy. Both teachers explained that they were aware that the Maltese education system does its best to try to catch up with the various technological devices which are being used in foreign countries and does this with *"the hope to improve literacy skills"* but this is not necessarily the case. Ms.Vella personally felt that from her experience most pupils improved their reading skills considerably throughout the years however she did not argue the same about writing. According to Ms.Vella technology has been promoting lazier students who are less attentive to spelling because students are getting used to writing in a very fast and short form when communicating to their friends outside of school. This concern was also expressed by Ms.Debono and the students themselves.

In addition, analysis showed that the class and literacy teacher's perspectives on technology seem to move in a parallel manner. They both agreed that the use of digital technology motivated the students to learn through enjoyment but did not guarantee that students become better readers and writers. Ms.Debono's argument was that today's students are more technological friendly but she believed that such students are more lazy with regard to learning compared to students from previous years: *"The use of tablets and computers is promoting typing rather than writing... even when it comes to reading... before children used to go to the library...*

nowadays children rarely go the library... they just browse on the Internet and find whatever they need online... I believe that they have improved in relation to the use of technology but at the same time when it comes to actual learning they are being left behind". This clearly shows that to this teacher technology could 'support' learning, and one could learn to use the technology, but there was no indication that the concept of learning was itself being changed by the presence of technology.

Additionally, Ms. Vella also reported that learners of the 21st Century *"are better solvers, better researchers and are able to interact globally... pupils are more in control and have access to a wider range of resources to use in their learning progress... for bright pupils, the challenges that computers offer encourage self-directed learning and with struggling learners technology is effective because it has unlimited patience".* It can be argued that the teachers' perceptions about digital technology were very similar. They both regarded digital technology as a *"helping hand"* when it came to lesson preparation and delivery. Although the teachers viewed technology as a *"helping hand"* data showed that technology is much more than this. Digital technology does not simply 'help' teachers teach but is influencing the very essence of what children learn as well as how they learn.

In sum, data from this study showed that both teachers and students regard digital technology as motivating and beneficial, but Malta has been slow to support teachers in using it. Teachers felt that decisions were normally taken from a top-down approach and more human resources were needed in order for them to use technology effectively. This contributes towards answering the second research question behind this study; 'What are teachers' and students' views on the role of technology in reading and writing in the classroom?' However, this does not answer the main research question which is about how technology is changing constructions of reading and writing. The teachers and students in this study see the school curriculum as defining what reading and writing is and what is regarded as valuable and 'educational'. Technology, within this context, is 'sitting' beside the curriculum and is not influencing it. As discussed in the Literature Review technology is changing how children read and write but this is clearly not recognised in schools, and certainly not in this Maltese context.

Whilst this section has sought to portray the students' and teachers' views on the role of technology in reading and writing in the classroom, the following chapters will go on to discuss what I have learned about this and how this clearly has major implications for policy making and teaching. However before addressing this it is important to see what the participants have said about the advantages and disadvantages of using technology in the classroom. The next section will therefore explore the teachers' and students' views of the advantages and disadvantages of reading and writing through digital technology.

4.4 Exploring the teachers' and children' advantages and disadvantages of reading and writing through digital technology

Through this study the students and their teachers revealed a number of perceptions of the advantages and disadvantages of reading and writing through digital technology. Amongst the advantages of digital technology use mentioned by the students and the teachers was the multimedia feature of technology. The students in this study reported that multimedia is regarded as a fun and stimulating method of learning whilst the teachers regarded multimedia as a tool which facilitated their teaching. Students also explained that they felt that they learned to read and write better through digital technology. Both teachers agreed that technology helped the students reach their teaching goals in a shorter time frame.

Throughout the study conducted it was observed that reading and writing took various forms, however students preferred carrying out reading and writing activities on digital devices rather than paper-based resources. This was expressed by the students themselves, and it was also noted that teachers were aware that students enjoy using the technology more when compared to 'traditional resources' such as books. This study has also revealed that educators used digital technology in class to promote reading and writing.

Ms.Debono for example was observed telling the students to use one of the computers at the back of the class once they completed their school task, and the teachers also used the technology in class as a reward for good behaviour. This was observed through instructional discourse such as *"Only those students who*

are sitting quietly will get to play the game", "I will take the tablet if you keep switching it on", and *"Students who are ready can use their tablet for 5 minutes".* Such instructions showed how teachers were making use of the digital technology provided in class to reward and motivate students. In comparison, students were never told that they will get to read a book or write a story if they behaved well.

Through the analysis of the data, the teachers' instructional discourse was analysed and it showed that digital technology was continuously being promoted as a positive reward for students to use when they finished their reading or writing task. Digital technology was promoted as a positive attribute by students as well as their teachers and unacceptable or undesirable behaviour could result in the removal of the digital device. Observations such as these show how much students value the use of digital technology in class. It also shows that teachers were aware of this value and used it in their favour in order to motivate students to perform better reading and writing tasks.

It can be argued that although all of this shows that technology was viewed as 'positive' by the teachers in that it was a 'reward', it also showed that technology was not seen as integral to everyday teaching and learning. Students were actually being denied access to the technology and only 'allowed' to use it once the 'real' paper work had been completed to a satisfactory level. This actually devalues the use of technology as it is not being seen as part of everyday learning activity. This shows how important it is to understand how children are reading and writing within the multimodal context of paper and screen, so that teachers can embed this in their teaching and promote reading and writing as a multimodal activity.

Furthermore this study has revealed that parents were also aware of the value children give to digital technologies. Data from this study showed that parents also used digital technology at home to promote reading and writing. Throughout the third focus group interview Maria explained that her father made use of an app in order to keep record of the number of books Maria read. Maria explained that for every one hundred books she read she got to buy a toy from the Internet. She further reported that her father coloured one box for each book read and she was reading a lot of books so that she could get a bike. Nathan further explained that

his mother used a reading chart which was saved on her computer and when he got to having read ten books she bought him a game, a toy or he got to download an app on his tablet.

Examples such as these show that parents like teachers are not giving value to reading and writing within the context of technology. The parents are valuing book reading and technology is being used to reward this rather than attempting to acknowledge the value of reading on screen. This shows how technological advancements are building upon traditional ways of reading and writing and being used as motivators and rewards. It further shows that both parents and teachers are aware of the value students give to the use of digital devices and through this awareness they try to motivate students to read more books. Data from this study clearly shows that screen reading is not being valued and technology is being used as a 'reward' to promote 'paper-based reading'.

Through this study the teachers also elaborated further on advantages and disadvantages of reading and writing through digital technology and to the list of advantages Ms.Debono added 'time-management'. Ms.Debono reported that digital technology is important in the classroom setting because it helped students to learn in a fast and quick way. For example whenever students did not know the meaning of a word Ms.Debono used 'Google images' in order for students to get a visual representation for the word which was not understood. This example shows that this teacher is using the visual affordance of technology to support reading but seems to be unaware that reading the visual image is actually part of 'reading'. The technology in this context is supporting the traditional constructions of reading.

'Time-management' was also listed as a disadvantage by the same class teacher. Ms.Debono and Ms.Vella both agreed that they encountered a number of technical difficulties when they used digital technology to carry out reading and writing activities. Both teachers complained that their laptops were extremely slow and that the projector has stopped working a couple of times. The teachers also reported that sometimes one of the computers found at the back of the classroom stopped working and this meant that fewer students could access the Internet or carry out research. When such difficulties arose the teachers explained that they

felt helpless. They felt frustrated when they had planned a lesson with eye-catching resources which in turn made reading and writing more appealing for students and they could not make use of them because of technical difficulties which were beyond their control.

A concern which was highlighted by Ms.Debono was that her pupils had become so accustomed to digital technology in class that she feared that if the educational system does not try to catch up with the advances of technology the effect of technology on students' learning would *"wear off"*. Ms.Debono also explained during her interview that although she believed that digital technology facilitated her teaching, traditional means and methods such as drilling or repetition and practice in teaching were both extremely important for students to learn. However Ms.Debono also stated that since todays' students are so used to digital technology students in turn find traditional methods boring and Ms.Debono reported that sometimes she found it hard to make students concentrate and participate in drilling sessions – which involved repeating structural patterns through oral practice.

Episodes such as this suggest that the children's exposure to digital technology is making them more discerning as learners and they want learning to be visual and fun. It can be argued that this does not sit comfortably with 'drilling' and therefore the system needs to change and find more visual and interactive ways of teaching children. It is important for educators to acknowledge a continuity between children's interaction with digital technology and their school based learning.

Additionally, a number of setbacks were also observed in Grade 3.2 where students were expected to bring their tablets to school on a daily basis. At the beginning of the data collection the students faced many filtering problems which took several weeks to be resolved and so during the first few months of the 'One Tablet per Child Pilot Project' the students could not use the Internet on their tablet. This made the students and the teachers frustrated since a lot of planning was not being put to good practice. At times the students also left their tablet at home, forgot to charge it or it had a technical fault. Each situation meant that that particular student could not carry out the tasks assigned to him or her in class. Such findings confirmed that students preferred to carry out reading and writing tasks on digital

devices and when these could not be used due to technical difficulties students were not keen to revert back to traditional modes.

The 'One Tablet per Child Pilot Project' also presented an 'unexpected' opportunity. Most students in this study owned and used their own personal tablet at home. Students reported that this was mainly used to play games, listen to music, watch YouTube videos and for leisure purposes. When the students in Grade 3.2 were presented with a tablet in an educational setting a number of students assumed that it was going to be used for leisure purposes rather than for educational reasons. The fact that the students were so used to digital technology outside the classroom brought the drawback of 'adaptation'. The same was applicable for the parents.

Reading and writing tasks on the tablets were assigned to the students on a weekly basis, and not all students used to carry out their homework tasks when these were given on their tablet. Amongst the reasons for this students explained that *"the Internet wasn't working at home", "I couldn't charge my tablet because there was no one at home"* and *"mummy said this was not important and told me to read 'The Treasure Chest'* [Oxford Reading Book – one of the students' school text books] *book instead".* Comments such as the last one showed that parents, like students, found it hard to adapt to the situation at the beginning of the project and took quite some time to understand the full educational potential of digital devices which were normally used in the 'outside world'. Data has in fact already confirmed that the school discourse has taught children that technology is largely associated with leisure and to less 'formal' school-based activities. So it is not surprising that the children and their parents associated the technology with leisure given the data presented in the previous section.

The Literature Review in Chapter 2 presented a number of advantages and disadvantages related to the use of digital technologies. However the literature reviewed in this thesis has not presented the difficulty of 'adaptation' which emerged through this study. This study has revealed that although today's students are exposed to digital technology they seem to relate its use to leisure rather than educational purposes. The same can be argued for parents. On several occasions Hons. Bartolo has emphasised that the main aim behind the use of tablets in

classrooms is an educational one and not technologically driven (Department of eLearning, 2015). However the pilot project has showed that educators have struggled in this respect and all teachers need to be aware of this struggle and supported in the best possible ways in order to make the best use of digital resources in the classroom.

Additionally, the literature presented in this thesis showed a mixed scenario on whether digital technology brings advantages or disadvantages to reading and writing levels. Cordes and Miller (2000) for example argue that technology does not promote a healthy childhood and hinders children's development. Some promote the view that technology is 'toxic' (Palmer, 2006) but this view is by no means shared with everyone. Marsh (2005) for example has pointed out that when children use technology at home they were identified as being active learners rather than passive. Gamble and Easingwood (2000) also referred to the view that those children who are exposed to technology at home will be greatly advantaged in terms of their performance at school.

In relation to this, BECTA (2007) argued that electronic communications can bring many benefits such as improved motivation and attitudes to learning, improved subject learning, independent learning and better research skills (British Educational Communications and Technology Agency, 2007). Additionally, it is inevitable that digital technologies are integrated into language classrooms since learning takes place in an interactive environment and digital technologies make this possible (Wang, 2005).

In sum, although the literature seems to support the use of digital technologies in the classroom and Maltese teachers are making use of this, teachers and students are not acknowledging that technology in itself is having an impact on what reading and writing actually is. Data in this study is demonstrating that the teachers are trying to push 'new' media into an 'old' curriculum. Although the teachers did express a lot of positive views about the role of technology in education, yet there was still the view that technology was not 'educational' in itself. This shows that there is a real tension in the Maltese classrooms about the role of technology in schools. This further highlights the need for this study which is not looking at how

technology supports traditional constructions of reading and writing, but how technology is changing constructions of what reading and writing actually is.

This study further revealed that there is a need for teachers to understand how children read and write today and acknowledge that constructions of reading and writing are changing in the light of technological advancements. This justifies the importance of this study which is set to understand how students read and write now as technology is becoming part of their home and school lives. The following chapter shall specifically look more closely at answering this research question and it will examine the concept of 'reading', how students and teachers defined it and how students were observed reading in class. Further themes related to 'reading' were identified in the analytical process, these include: multidirectional reading, skim reading, reading of images and collaborative reading and will also be discussed in the following chapter.

CHAPTER 5

Reading in a Digital Age

5.1 Introduction

This chapter builds on the findings discussed in the previous chapter. Chapter 4 has explored the students' attitudes towards school and the teachers' and students' views on the role of technology in reading and writing in the classroom. It further explored a few advantages and disadvantages of reading and writing through digital technology from the teachers' and students' perspectives. Chapter 4 has contributed towards answering the second research question behind this study. This chapter however will address the following research question: 'What is reading in the digital age and how do students and teachers define it in the 21st Century?'

Learning to read can be regarded as a fundamental aim in early years education (Levy, 2011; Chapman and Tunmer, 1997). Levy's (2011) study showed that children as young as four years believed that learning to read was a prime function of schooling. The young participants in this study also regarded learning to read as one of the main aims behind going to school. Several studies have been conducted about the teaching and learning of reading (Ahmed, 2012), including studies seeking to understand what the terms 'reading' and 'being a reader' means (Levy, 2011; Bartlett, 2008) and how the meaning of reading has changed throughout the years (Carrington, 2005; Liu, 2005). These issues have already been addressed in the Literature Review and the sections which follow discuss the findings of this research in relation to the literature in the field. In addition, a number of themes related to 'reading' were identified in the analytical process, these include: multidirectional reading, skim reading, reading of images and collaborative reading and will also be discussed in this chapter.

5.2 Exploring students' definitions and perspectives on reading

The young participants in this study were asked to draw themselves during a reading and/or writing activity. They were all provided with a blank A4 sheet of paper and were encouraged to work on their own. The students were told that they could make use of speech bubbles or printed text if they wanted to. Twenty-eight students were present on the day the session was conducted. Eighteen images

featured drawings of students engaged in a reading activity; ten drew themselves during a writing activity whilst five students opted to draw themselves and their friends doing both activities.

All drawings were analysed in terms of the physical environment, participants and resources drawn. The following are some of the questions which were asked during the analysis of each drawing: Which environment did the child choose to draw? Which resources did the drawing feature? Did the drawing include printed text? What do the facial expressions drawn show? Who are the characters in the drawing and what are they doing? A few drawings showed children reading in the school yard as sometimes reading sessions were conducted outside whilst another two students drew the school library – another common setting at school in which reading sessions were sometimes conducted. It was also noted that only two drawings featured the home environment and the same two drawings also featured a drawing of a computer and a tablet. This in itself is very revealing as it builds on findings which were explored in the previous chapter. The data here are indicating that technology is not seen as being part of 'reading' and 'writing' within the school context.

The rest of the drawings showed children reading books on their own or with friends. It was also observed that students drew books in their hands or on the table in front of them. Even if the students chose to draw themselves with some friends, each child was drawn reading from an individual book. Books featured in all of the drawings collected. The figure of the teacher was also common although this was not present in all of the children's drawings. The drawings showed happy emotions and some of the drawings also featured the theme of 'love' and some of the children opted to draw hearts and wrote statements such as *"I love books"* and *"I love reading".* It can be argued that the analysis of the drawings showed that there were several signs which suggested that the children enjoy reading such as happy faces, the drawing of hearts and the written word 'love'. Two of such drawings which featured the theme and word *"love"* are presented in Figure 5.1 and Figure 5.2.

Figure 5.1 shows Amanda's drawing which features a student and the teacher in a classroom setting. The student is seen sitting down on a chair whilst the teacher is standing up. The student also drew the teacher's desk at the front and also decided to add speech bubbles to her drawing where the student is asking the teacher for her assistance whilst reading: *"Miss, what* [written wath] *is this word?"* with the teacher replying *"That word is 'love.'"* Marthese's drawing shown in Figure 5.2 shows a drawing of herself and her friend reading outside on the grass. The figures are labelled and Marthese drew herself saying *"I love too reading* [I love to read]" *whilst* her friend replied *"me too I love."*

During the focus group interview Amanda, the girl who drew the drawing presented in Figure 5.1 explained what she drew; *"I drew me and you! I am reading there* [referring to her drawing]... *I am reading a love story... I simply love reading love stories...the teacher there is helping me read one of the words".* This statement shows how Amanda's definition of reading is related to both decoding and making sense of the whole text. The teacher is seen as the main protagonist for teaching and for providing assistance with reading. This was also featured in other drawings. It was also noted that in all the drawings that featured a teacher, the figure of the teacher was always drawn in a standing up position whilst the students were always drawn sitting down.

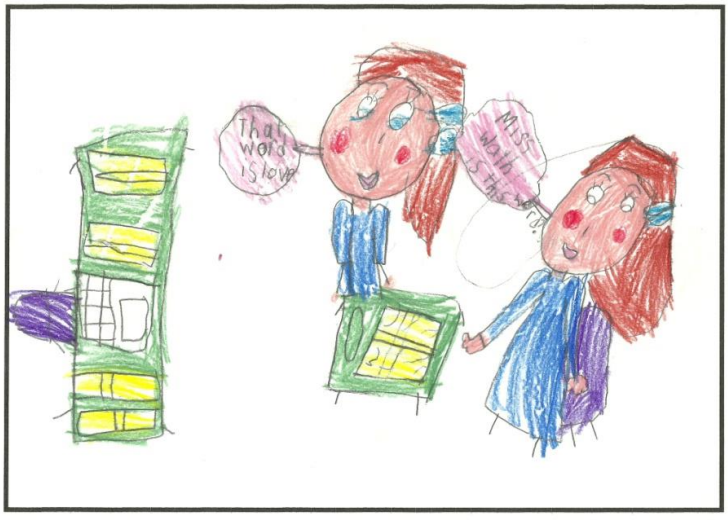

Figure 5.1: ***Amanda's drawing - 'Reading in class'***

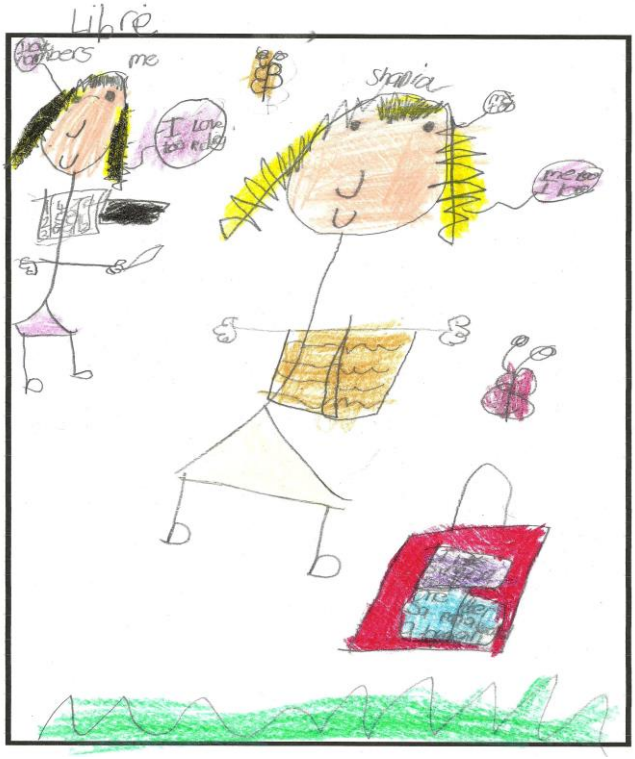

Figure 5.2: ***Marthese's drawing - 'Reading in the school yard'***

When the students were asked to elaborate on what was needed for the teacher to teach reading they mentioned the whiteboard marker, the interactive whiteboard, mini-whiteboards, laptop and school books - mainly 'Oxford Reading Tree' books for teaching English reading and 'Senduq Buffuri' and 'Senduq Kuluri' for teaching Maltese reading. It must be noted that the students only made reference to technology once they were prompted to think more deeply. While technology was mentioned, books were given a prominence. The analysis of the data further revealed that students made constant reference to the school reading books and this highlights a certain 'traditional ideology' in that these children reported that reading was related to the use of traditional schematic text.

This notion was also shown through the Oakfield Study conducted by Levy (2011) which found that young children defined reading as the ability to decode print in books, while reading scheme texts were further regarded as 'a major influence in the development of self-perception in reading' (p.65). Levy's (2011) study also showed that reading scheme texts were also 'highly influential in shaping what 'counts' as literacy (p.71). During the interview carried out for the study reported

in this thesis one of the students also referred to her very first English reading book which was a school set reader. She recalled reading it at school and at home several times to the extent that she knew the words in the book by heart. During the interview the other students nodded and expressed agreement with her.

Further analysis also showed that students regarded reading as being school-based since most of the drawings were situated in the school setting and books were central to this. All eighteen drawings of children who drew themselves reading showed themselves reading from books and no drawings featured students reading directly from a computer, tablet or any other technological means. Given that these students were reading on screen as well as on paper, raised the question; 'Why did this not feature in their drawings?' Given the data presented in Chapter 4, this is not surprising and this confirms how the school discourse influenced the view on what is considered to be 'reading'. It further shows that constructions of reading are taught in a very traditional manner and for these children reading is highly associated with books.

In order to further understand the students' self-perceptions in relation to reading, six students – three boys and three girls – were chosen for a focus group interview. During the first focus group interview conducted, the students were asked to elaborate on their drawings and this helped in gaining a deeper understanding of the children's perceptions and their relationship to reading, as well as answer questions that came up during the analysis of the drawings.

In order to elaborate further on the students' definitions of what they understood by the term 'reading', the students who participated in the second group interview were presented with a picture of Zanu, the alien. The students were encouraged to define 'reading' to Zanu. Some of the definitions provided are presented in Figure 5.3. The students' definitions presented in Figure 5.3 suggested that they saw reading as very much a paper-based activity. The students' drawings also matched and mirrored their definitions expressed by word of mouth and their definitions featured the words *'book', 'words', 'sentence'* and *'poem'.*

"Reading! Reading is when you read! I will tell the alien that reading is when you read from a book." (Nathan)

"You look at words and you read them out... you spell them in your head and say them... you read a sentence... you can read a poem or something of the sort..." (Chanelle)

"You read the word and then you spell it." (Hailey)

"You look at words... and you say them... when you say words you see you will be reading." (Alan)

Figure 5.3: ***Students' definitions of 'reading'***

Since most students drew themselves in the classroom setting they were asked to discuss the places where reading normally took place. The students agreed that reading was done around the school; most of the time in class, outside in the school yard or in the school library. This belief was echoed in the drawings. However two children did mention that they read at home; when they were asked why they did not choose to draw themselves in the home David reported that it is in class that "*formal reading"* took place. According to this student formal reading is when the student is asked by the teacher to read a particular text in class which is chosen by the teacher. According to David that was regarded as "*proper reading*" whilst the reading activities that were carried out at home or outside the school setting were considered as more *"relaxing", "fun"* and *"less formal".* This shows that this particular student distinguished between academic reading which was carried out within the school setting and reading for leisure which was carried out outside the school setting.

Most students showed agreement with David's point as they were observed nodding. David also reported that reading at school involved harder work as their teacher assessed their intonation and use of punctuation marks whilst reading in front of their peers. This was further elaborated upon during the focus group interview and the students reported that reading at home was less formal than school, partly because it did not normally have time constraints. Steven for example described reading at home as a *"comfortable"* activity, *"especially when I do not have to read the school books"*. Steven also expressed how tense he felt

when he was asked to read in front of the other students in class. This was further observed during the classroom observations. Whenever Ms.Debono asked for volunteers to read a particular text it was observed that only the same two students raised their hand. Students also explained their discomfort when the teacher asked them to read even when they did not volunteer reporting that this made them feel *"forced"* and *"uncomfortable".*

It was interesting to note that it was only when the word 'technology' was mentioned to the students that they made a distinct connection between 'reading' and 'technology'. None of the drawings featured reading from a technological device and 'technology' did not feature in the students' definitions of reading either. However, during the interview Chanelle mentioned that *"you can do lots of stuff on your tablet... you can play games, take photos and sometimes read".* In response to this Shania added *"on a tablet you can also read books... last time my sister showed me a book on a tablet"*. Hailey then also agreed that one can read from a tablet through the use of an app, stating; *"you can read from apps... you click on it and you may find a library in your tablet... you choose a book from there and you can read it on your tablet".* However while these girls seemed to acknowledge that reading occurred through the medium of technology this view was not supported by all the students.

Chris for example stated that although one can read from a technological device this is not "*proper reading"* because it does not involve using a traditional book. He reported, *"I do not have a tablet... but I've got a computer... sometimes dad uses it... he goes on Facebook... sometimes he leaves it open and I start reading... so you can use the computer for reading but then again that is not proper reading".* This shows that although learners in the digital age are exposed to various texts and the use of technology devices by young children is increasing at home and in the early childhood setting (Neumann and Neumann, 2014), most students in this study still related the concept of 'reading' to books. Data also indicated that the students spoke of reading through technological devices only when the word 'technology' was introduced into the conversation; prior to this 'reading' was addressed as an activity which could only be carried out through paper-based

resources. The findings showed here confirm that for these children reading is seen as the decoding of print and although observations showed that students read on screen this was not acknowledged through their definitions or drawings.

In order to elaborate on the students' definitions of reading, the students were further observed reading in class. Data showed that when the students in Grade 3.1 had completed their classwork they were always given two options. They could use one of the computers found at the back of the classroom, access ilearn and work on a follow-up activity or else they could take a book from the library and read it on their own. It was observed that the four students who finished their work first always chose to use the computers rather than taking a book from the class library. This implies that the students preferred carrying out an activity on the computer rather than taking a book from the library.

During these observations I had the opportunity to observe students reading on their own. Data showed that the students did not take long to choose a book from the library and most students were observed looking at the front cover of the book and reading the blurb at the back of the book before proceeding to their seat. This has been confirmed through one of the focus group interviews through which students explained that they enjoyed taking books from the library and that most of the times they chose a book by looking at the images found on the front cover. This implies that the images on the front cover of the book help children decide which book to take. It further shows that students were giving importance to images and were 'reading' the 'information' they conveyed.

Whilst reading on their own, some of the children used their index finger and followed the printed text. While the children were reading it was observed that they all constantly paused from reading the print to look at the images and pictures which complemented the text. Following this observation, the students in the focus group interview were asked where they focus whilst reading. Matthew explained that he looked at words and images whilst reading and that these are both equally important. The rest of the children however believed that printed text is more important than pictures whilst reading. What is more Antoine also reported that he preferred to read stories with no pictures, *"because it will not be really colourful*

and you read more... so you pay more attention to the story or the thing you are reading and you get to see more words". Data from this focus group interview revealed that for many of these students, images were regarded as a distraction from the real and serious business of reading print and although they were helpful in helping them choose a book, images distracted the reader from reading the printed text.

Some of these children also explained that they regarded books with a lot of pictures as being *"babyish"* and ideally suited for those students who *"struggle with reading".* Shanaia emphasised this view by stating that book layouts are different and are catered for children at different reading levels; she reported, *"like for example once my sister found two books which were for sale. They were the same but one had a picture with words and the other had the same pictures but they were not coloured and it had no words... both books are important because each one can be used for children with different ages and abilities".* This scenario is showing that again pictures were being seen as not only unnecessary but actually unhelpful to the reading process. Students like Shanaia reported that books with plenty of images were considered to be ideal for young readers. Shanaia also stated that the older students have less images in their books. According to Shanaia this shows that books with no images are more important than those without.

This section presented findings from the data about how students in this study defined reading in the 21st Century. Furthermore, this section has also examined the students' perspectives on reading and has shown that most students regarded reading as a fun activity which is normally carried out on an individual basis. Students reported that they were engaged in reading activities at school and at home and have distinguished between school and home reading practices and resources. Students further reported that reading at school is more formal whilst reading at home is more informal and normally associated with leisure purposes. Students preferred reading at home rather than school because they felt uncomfortable when the teacher asked them to read in front of the other students in class. Observations have also showed that when students were given the option

to carry out a reading activity on the computer or take a book from the library they preferred the first option.

In addition, analysis has shown that students are conforming to a schooled definition of reading, despite the fact that they are clearly reading regularly on screen. Furthermore students continuously related 'reading' to the reading of books. Data showed that students were aware that different books are designed for different reading levels and they perceive too many images in a reading book to be rather childish. Analysis also revealed that students see images and pictures in book texts as something that inhibits 'real' reading, as reading for them is all about the print in books. This study has also revealed that students distinguished between 'formal' and 'informal' reading. 'Formal' reading was linked with the reading from books whilst 'informal' reading was connected with the reading from digital technologies.

Through this study the definition of 'reading' has also been explored through the teachers' perspectives. During interviews both teachers were asked to give their own definition of the term 'reading' and these will be explored in the section which follows.

5.3 Exploring teachers' definitions and perspectives on reading

During the interviews conducted Ms.Debono and Ms.Vella were both asked to define the term 'literacy'. They both agreed that reading and writing fall under the umbrella term 'literacy'. Ms.Debono reported that she regarded 'literacy' as being related to 'languages' and *"reading and writing in a good grammatical manner"* whilst Ms.Vella explained that there were other factors which contributed to the meaning of literacy in the 21st Century. Ms.Vella reported that the definition of literacy has changed due to social factors, reporting that *"literacy in the 21st Century has changed a lot since technology and society are both changing. Being literate in today's world does not just mean being a good reader and a good writer but one has to gain proficiency with tools of technology".*

This shows that Ms.Vella acknowledged that the definition of 'literacy' is changing due to technological advancements. Through her last quote she also argued that a

literate person is not just a person who knows how to read and write on paper, but is now including the use of digital technology. It can be argued that although this has been said by Ms.Vella, this was not reflected in her definition of 'reading' and furthermore classroom observations revealed that these Maltese teachers tried to fit technology within a fixed traditional curriculum. Reading, for example, was observed to be mainly carried out through printed books. The teachers in this study also reported that they preferred using big books or schematic texts rather than e-books during their lessons.

Through the interviews, the teachers were asked to specifically provide their definitions of the term 'reading'. These definitions which are presented in Figure 5.4 show that according to the teachers reading is about reading print through various processes. Moreover both teachers also reported that comprehension and fluency were related to good reading skills and while comprehension did sit within a definition, both of these teachers emphasised phonics and decoding within their definitions of reading.

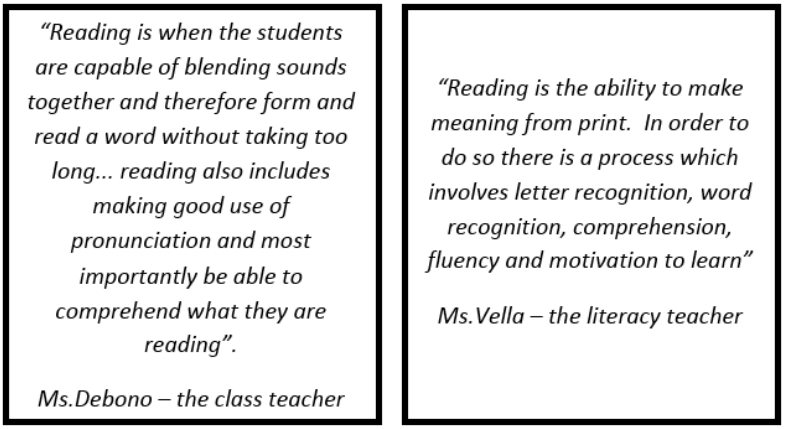

Figure 5.4: ***Teachers' definitions of 'reading'***

The definitions in Figure 5.4 show that the views of these teachers in the Maltese context are consistent with the views of many other teachers reported in the literature. This study confirms that reading for many teachers is still being defined as 'the ability to communicate through and about print' (Pellegrini and Galda, 1998, p.131). This has also been reflected in the definitions outlined in Figure 5.4. While research has showed that literacy patterns have changed and evolved from print to digital and multimodal ways of making meaning (Yamada-Rice, 2010),

both the students' and the teachers' data showed that they regarded literacy patterns as being highly related to print-based texts.

It is not surprising therefore that the students in this study have reported similar views to their teachers. This seemed to be the case even though the teachers explained that they personally did a lot of online and screen reading, used social media and 'chatting apps' on a daily basis, with one teacher actually reporting that she has "*forgotten the last time a book was held in hand."* This is important because this suggests a tension even for the teachers between what they do and what they believe on the basis of the school discourse.

In sum it can be argued that the students' and teachers' definitions of reading suggest that the participants of this study do not regard reading on screen as being of value. Reading on screen was normally allowed once the 'real' school work has been completed. In addition, on screen reading was not regarded as being 'educational' but rather related solely to leisure purposes. It is important for policy makers and educators to acknowledge the importance of on screen reading within the classroom context. The Maltese education system needs to value the use of different resources and more importantly teachers need to accept the fact that students can benefit from reading through digital technologies. In addition to understanding how students and teachers define reading, this study has sought to observe how 21st Century students actually read. This will be briefly explored in the following section which will be followed by an exploration of the various ways in which students were observed reading.

5.4 How do students read in the 21st Century?

Research seems to agree that the definition of what it means to be a reader in a 'digitally-driven world' is changing (Martin, 2014) and the 'teaching of reading has remained a contentious topic over the years, and has been fiercely debated in terms of approach' (Levy, 2011, p.1). As discussed in the Literature Review in Chapter 2, the definition of what 'reading' means has been constantly changing with the birth of new technologies (Kress, 2003). However, the initial definitions of 'reading' presented by the students and the teachers in this study did not feature

the use of technology or screen reading and it can be argued that they were quite traditional in nature.

As highlighted in the previous section both students and teachers reported a very narrow definition of reading, which was not only focused on the decoding of print in paper-based texts, but even rejected the value of images in books. Even though this was reported to me, I also spent time closely observing the children with a view to understanding how they were reading and writing. Students were observed reading within their classroom setting and observations confirmed that they were exposed to multimodal texts as well as the more traditional paper-based texts. This confirms that as Rowsell and Walsh (2011) point out, 21st Century educators are now faced with the challenge of mediating traditional notions of what it means to read and write.

As already mentioned, while observations of all reading sessions were conducted in both classes, the observations in Grade 3.2 provided more scope and insight for observing reading on screen due to the fact that they were using tablets as part of the pilot project. In both classes students read screen and paper-based texts, however paper-based resources seemed to be more dominant in Grade 3.1, whilst technological resources were used more regularly in Grade 3.2. The technological resources which were mainly used in Grade 3.1 were the interactive whiteboard and the computers. The same resources were used for reading in Grade 3.2, however the students in this class had access to a tablet which could be used on a personal basis. Therefore the 'One Tablet per Child Pilot Project' provided an excellent opportunity to observe the different ways in which children were reading paper and technological texts across both classrooms.

In short, observations revealed that these students, like many others reported in the literature, were reading and writing on screen – yet this was not acknowledged in their definitions of reading. Despite this, I spent time closely observing the students in order to understand what 21st Century reading and writing actually is – and the following sections focus on reading. Through the observations conducted it was evident that meaning making was occurring through various modes in the classroom setting; this included traditional, paper-based, digital and multimodal

texts. Furthermore students who were observed reading from a technological device made use of different strategies compared to those students who read from books. The strategies observed are explored in the sections which follow.

5.4.1 Multidirectional reading

Data from this study has shown that when students were observed reading through a paper-based text, reading occurred in a very structured and linear manner. Data also showed that when students read through a technological device, reading took a multidirectional form. This finding was reached through the analysis of the observations.

During a particular observation in Grade 3.1 three students were observed reading a book from the library after they finished off their school work. One of the students chose a book from the class library without looking at the cover of the book, whilst the other two were observed looking at the title and the images on the front cover of the book before proceeding to their seat. One of these students read the blurb at the back of the book before taking it to her place. Once the children opened the books they all read in silence with two students following the words with their index finger. All three students were observed making a number of pauses whilst reading to observe the images which were found adjacent to the text in all three books chosen.

From the way the children moved their index finger through the text I could tell that one of the students was struggling to read the print, and was pausing at each word and spelling each letter. The second student was also using his index finger to follow the printed text, but the speed and efficiency of this suggested that he was not having difficulty in decoding the print. Similarly the third student was not using his finger to follow the print, but his facial expression, engagement and speed of turning the pages suggested that he too had little difficulty in decoding the print.

The students observed read the stories in the books in a very linear manner starting from the first page and turning the pages simultaneously. One of the students who chose a book with several stories inside also opted to start reading the first story first even though the stories were not sequential. Reading was observed to be very

formal and when the teacher told the students to stop reading two of the students put a piece of paper in the book as a book mark and put the book underneath their desk. This suggests that the children were interested in continuing to read the book at a later stage. The other student who was observed struggling with the reading process closed the book very quickly and put it back in the library without hesitation. Similar scenarios were observed each time students were asked to read on their own in Grade 3.1 and Grade 3.2.

It is important to note that when students were asked to read a book on their own, they were always directed to work independently. This seems to be part of the formal practice of many lessons in Maltese classrooms and the children were given a small punishment when they were observed to continuously talk in class. For example, Ms.Debono was observed writing down the names of pupils who were very talkative at the side of the whiteboard. These students would then be asked to sit down for a few minutes during break time as a 'punishment'.

Whenever the children were given the opportunity to do some reading using the class computer or the children's tablet it was observed that the reading process was carried out in a different manner. The teacher's language of instruction used was also noted to be different. For example, Ms.Debono was observed giving directions to the students such as; *"When you're ready from your school work you can use one of the computers or read a book from the library", "make sure you read the title and the comprehension text properly before answering the questions"* and *"I will ask you about the search you have done on Google".*

Similar directions were given when the students were asked to use their tablet; *"when you're ready you can go through the websites which I uploaded on our class page or else you can choose to read a book from the library".* It became increasingly apparent during the process of data analysis that teachers tended to use the word '*read*' when they wanted students to engage with a book, whilst terms like '*use* the computer' or '*go through* the website' were used whenever the teacher asked the students to engage themselves in an activity using a technological device. Therefore it was observed that the language of instruction used by the teachers varied according to the mode of reading. The verb *'read'* was normally

used and associated with print-based resources whilst verbs such as *'browse', 'go', 'ask'* and *'find'* were frequently used in relation with screen reading. This implies a degree of activity that is associated with screen reading and which was not evident in the language associated with making meaning from printed texts such as books.

Data analysis enabled me to compare students' reading processes through different resources and it showed that students tended to read in a 'multidirectional manner' only when they read on screen. On a number of occasions for example, students were asked to research a particular topic on the Internet. Most students were observed 'navigating' through the reading process and technology also enabled the students to read through hyperlinks. Within this context 'navigating' means reading in a non-linear manner and 'jumping' from one article or webpage to another.

Therefore students were observed reading in a multidirectional, non-linear and multimodal manner on screen. Similar findings were also explored by Simpson, Walsh and Rowsell (2013) who argued that 'the reading paths down which students travel are not only non-linear and multimodal but multidirectional, where the term multidirectional is taken to refer to interaction across interrelated textual dimensions and platforms' (p.123). Furthermore, through their observations Simpson et al. (2013) found that when using the iPad students shifted between epistemic frames whilst reading. Students were seen to read, process and think and problem-solve, sometimes moving back to written text and then moving on to another problem-solving game.

This present study builds on the existing literature in a number of ways. Firstly, it is important to recognise that this multidirectional reading was taking place in a Maltese school where constructions of reading tended to be very formal and 'traditional'. Secondly this study indicated that these students were not only successfully reading in this multidirectional manner when reading on screen, but that this appeared to motivate the children to read more in comparison with linear reading. This was confirmed through the observations and the semi-structured interviews. As Ms.Debono explained, when 'unconscious reading' is taking place

children tend to *"get lost in what they are doing".* Ms.Debono's insights matched my observations, which revealed that these students had the tendency to keep on using the technology long after they were given directions to stop.

Data also showed that through hyperlinks and hypertext students felt 'lost' in reading and enjoyed reading for a longer period of time in comparison to reading a book. It has been argued that hyperlinks and hypertext presented on screen deal with 'a network of links between words, ideas and sources, one that has neither a centre nor end' (Snyder, 1997, p.127*)* and therefore hypertexts and hyperlinks offer 'non-linear pathways for both reading and writing' (Simpson et al. 2013, p.124). My research also reflected that of Landow (1997) which showed that when students were engaged in hyperlinks and hypertext reading they had more power over what they were reading. This was evident through one of the focus group interviews when two of the students reported that they could choose what they wanted to read on screen. This was further confirmed through the classroom observations.

The literature portrays different views on multidirectional reading through hypertext. According to Liu (2005) 'the more links encountered, the greater the potential differences in reading path' and 'hyper-reading may also affect sustained attention and contributes to more fragmented reading, since each page has to compete with many other pages for the user's attention' (p.707). Furthermore it has been argued that hyperlinks might distract readers and their thinking, as Miall and Dobson (2001) found that hypertext discourages one to reflect about the text being read. Miall and Dobson's (2001) compared hypertext reading with linear reading observing that hypertext readers took longer to read, felt confused and some of the readers complained that they felt that they missed something whilst reading. Their empirical study showed that hypertext reduces the reader's engagement during reading.

My own study has shown that students took longer to read or research a topic but they reported that hyperlinks help them focus and narrow down their research. This challenges Miall and Dobson's (2001) finding as observations also showed that students interacted more with other students whilst reading on screen and through

multidirectional reading students were more engaged during the activity in comparison with those students who were observed reading from books. Furthermore literature has showed that hypertext promotes a non-linear structure and might therefore confuse the reader whilst reading (Charney, 1994). DeStefano and LeFevre's (2007) review showed similar findings to those described by Miall and Dobson (2001) and Charney (1994).

The study reported in this thesis has however challenged such findings as the students themselves explained that they preferred reading through a multidirectional manner and hypertexts and hyperlinks helped them narrow down their research and focus specifically on the topic being researched. Additionally, it was also noted that students who were reading from books stopped immediately when they were given directions by their teacher to stop. On the contrary, when students were reading on screen, the students continued reading from their devices long after they were given directions to stop.

In summary, data from this study indicated that students felt more at ease making use of hyperlinks and they reported that they regarded this as a modern type of researching tool. DeStefano and LeFevre (2007) have concluded that hypertext reading tends to increase visual processing and decision making and this 'cognitive load' is likely to inhibit the performance of reading comprehension. Although many studies have focused on the negative impacts of hypertext (DeStefano and LeFevre, 2007; Miall and Dobson, 2001; Birkerts, 1995; Charney, 1994), Landow (1997) has provided an opposing argument and stated that hypertext 'increases individual freedom' because 'users are entirely free to follow links wherever they please' (p.273).

My study has shown that these students enjoy making use of hyperlinks and hypertext. They have argued that they consider multidirectional reading as the best method to carry out a research task and students also reported that they regard multidirectional reading as a *"modern way of reading"*. This is especially revealing because the Maltese context is somewhat 'traditional' and my earlier findings have shown that students and teachers are highly influenced by constructions of literacy that are determined by the curriculum and largely did not

see technology as being 'educational'. Yet even in this climate the findings revealed that these children are successfully engaged in multimodal and multidirectional reading even defining it as a *"modern way of reading".*

Classroom observations revealed that multidirectional reading was not the only form of reading observed throughout this study. When reading from screens, students were observed skimming through the text and only reading the information which they found purposeful, relevant and related to the topic being researched. The section which follows shall elaborate further on this skill.

5.4.2 Skim reading and looking for keywords

Data indicated that students in this study were using specific skills in their screen reading which were not apparent in their reading of paper texts. In particular it was noted that students engaged successfully in 'skim reading', which will be discussed in detail in this chapter. In addition, the data revealed that students were 'keyword spotting'– a term that I will also explain in this section. Skim reading and 'key word spotting' can be regarded as skills which students were observed practicing on a number of occasions.

For example during one of the observations a particular student, Amanda, was using one of the computers at the back of her classroom and typed in 'nick jr' in the search bar and a list of websites was shown. The student was observed skimming through the description of each listed game. Amanda literally skimmed through the text with her index finger whilst reading out loud a few keywords and a few chosen sentences at random to get the gist of the text, without reading word by word. The same girl was also observed hovering over text and this made her find what she was looking for in a faster manner. Liu (2005) has described similar behaviour as a 'lack of patience' however this present study showed that students like Amanda regarded skimming as a useful skill.

The students were observed using the skill of 'keyword spotting' on a number of occasions. During another observation two boys were using the computer and one of the boys typed in 'learning games 8 years old' in the Google search bar and scrolled down the screen whilst skimming through the text shown. The children

highlighted a few words whilst going along the list provided such as *'shooting game', 'match the words', 'fire the balls'* and *'double the numbers'*. They did this without reading the whole description of each game. The skills of 'keyword spotting' and 'skim reading' were also used whenever the students were asked to research a topic and use the Internet. On the other hand these skills were not observed and used by students within the context of paper texts. The same was found in Liu's (2005) research as one of the participants in her research argued, 'I skim much more html pages than I do with printed materials' (p.705).

Herold (2014) also discovered that when reading on screen, readers seemed to skim through the surface of texts rather than read in a deep manner. Similar findings were found by Walsh (2010) who argued that the navigation of on screen text frequently involves 'radial browsing', which is different from the sequential type of reading of printed text. Data from this study showed that students seemed to 'skim through the surface of texts' but students reported that they found this tool extremely helpful because they did not 'waste' time reading something which was not relevant to their task. Furthermore, the students reported that skim reading helped them narrow down their browsing.

Screen-based reading is becoming more popular and browsing, skimming or scanning are becoming 'a principal reading pattern in today's information-intensive environment' (Liu, 2005, p.705). According to Liu (2005), the screen-based reading behaviour is not categorised as 'intensively' or 'extensively' but it is rather categorized by more time on browsing and scanning and reading in a selective manner. Liu (2005) also explained that in the 21st Century less time is being dedicated to in-depth and concentrated reading whilst sustained attention is decreasing.

Data from this study showed that the students regarded skim reading as an efficient tool because it helped them focus on what is relevant. Furthermore, the data revealed that students appeared to feel more in control when they were asked to read through a technological device. When students read on screen they considered themselves as the main actors and the main participants responsible for navigating a path to where the reading will actually lead. In contrast the data indicated that

when the children were reading paper-based material they did not feel they were 'protagonists' but rather passive readers.

This was expressed through one of the focus group interviews when Alan argued; *"I love it when the teacher asks us to look for information about something… last time for example, we were asked to look for information about the sun… I could look for information in any way I wanted… I was not asked to do this in a particular manner… I started by typing 'information about the sun for kids' in the search bar… then I just clicked on a few links until I found all the information I needed."* The same notion was expressed by Ms.Vella who stated that she felt that students nowadays *"interact globally"* and that the multidirectionality notions of skim reading encouraged the children to *"have a more active role rather than the passive role of being a recipient of information and absorbing information by the teacher or books".*

In summary this study suggests that for these students reading on screen seems to be merging notions and skills such as 'skimming' and 'keyword spotting'. Similarly Liu (2005) found that students make use of 'keyword spotting' in order to 'cope with the overloaded information environment' (Liu, 2005, p.706). This was also evident in the first two episodes referred to in this section. The observations conducted through this study showed that when students were browsing on the Internet they normally started their search by typing a few words in the search bar. Following this, the students were observed reading a few key words as they scrolled down the screen and clicked on the link which they thought was most relevant to their topic of research. Once the article or webpage was regarded as relevant to the students, the students were observed skim reading through the text.

Data analysis further revealed that children regarded images as important since these are visual representations which also represent information. The following section will address how students read images and made meaning from visual representations.

5.4.3 Reading of images

Data from this study has shown that when students read on screen, they were not only reading text but they were also 'reading images'. During one of the focus group interviews conducted, Josef for example explained that *"through some petting games* [games which involve the care of a particular pet] *you have to read... a lot... you have to read the title of the rooms like 'kitchen', 'living room' and then you have like pictures which mean something like for example a picture of the potion stands for a 'life'... I do not have to read the word 'life'... once I see the image of the potion I know what it means".* Shanaia agreed with this by stating that *"visual images... they all mean something"* and *"the pictures help me read."*

The students made constant reference to the fact that they 'read images' through online games and whenever they used a technological device such as the tablet. Alan elaborated further on this when he stated that *"you automatically just know how to read the images... you would know... through practice you would know what each picture stands for... and when you don't you can always put the mouse on the picture... it will show you what it means... you can read it."* Here, Alan was referring to the function of hovering over text. This is when a person points the cursor over a link on a web page or an image or symbol. When this is done, the user can identify what each image or symbol stands for.

Data from this study and examples such as those identified in this section show that students are aware that on screen images convey meaning and that they are 'increasingly prominent' (Dowdall, 2006, p.42). The students here all showed how the use of images helped them read. Shanaia's statement, *"the pictures help me read"* is a perfect example which shows how helpful images can be for students who are engaged with on screen activities. The students also agreed that images convey a lot of information. Given Shanaia's statement, however, it can be noted that the students did not refer to the reading of images when they were asked to define 'reading'. Data which was reported earlier in this chapter also showed how students did not regard images in paper-based resources as important. On the contrary, students regarded images in books as *"babyish"* which could alienate the reader from the actual reading.

This was also evident during one of the focus group interviews conducted through which one of the girls explained that whenever they were given a book to read all they had to do was *"read it – nothing more... nothing less"* and *"it is harder to look for particular and specific information in books".* During the same focus group interview Hailey supported this idea by providing a practical example. She spoke of an activity related to one of the Oxford Reading Tree scheme books called 'The Treasure Chest'; for one of the follow up activities the students were given a handout with pictures of different kinds of fish. The students were expected to match the names of the fish with the pictures. As expected, the children found some of the matches easier than others. The students were encouraged to use any means within the classroom setting to match the corresponding names to the fish images shown. Without hesitation, all the students opted to take out their tablet and they were observed typing in each particular fish name in the Google search bar and then clicking on 'images'. The students went for this option even though they were aware that the class library had a set of six books titled 'Fish around the world'.

This confirms that students are aware that paper-based and screen reading have different purposes and skills such as 'skim reading', 'keyword spotting' and 'reading of images' facilitated the work for students. This was further evidenced through Hailey's argument when she said, *"do you remember the time we were asked to write and match the fish names? Can you imagine looking for all those fish names in books?* [the other pupils started giggling at this thought]... *That would have taken us ages to finish... books are not good for everything... sometimes the Internet is faster because it provides us with the right information in such a short time… the pictures of the fish on the Internet provided all the information we needed".* This scenario shows how technology facilitated the students' search and how they gained the information they needed through an access to images in a very short and practical manner.

Kress (2003) argues that image is in many ways replacing the reading and writing of print and moving into the centre of communication. Furthermore as one of Liu's (2005) participants noted 'people are doing more and more 'picture' reading,

looking for illustrations to explain charts and pictures. Any document with texts only will bore many savvy IT users' (p.706). A common and recurring theme which emerged through the analysis of the data was 'the reading of images' - images were being read by students alongside other modes such as sound and printed text. The notion of 'reading of images' was also a theme which continuously emerged and was mentioned by students throughout each focus group interview conducted. Although this was observed throughout all the observations which were conducted in Grade 3.2, students did not acknowledge this as 'proper reading' because it did not fit within the educational discourse and was not acknowledged within the curriculum taught.

Additionally, at times students were also observed reading icons which represented printed text. It can be argued that the reading of images is another skill which learners in the 21st Century are developing. The students in this study showed that they recognised that they could derive meaning from images when accessing on screen texts. The literature shows that adults seem to accept that young children indulge in images and icons whilst reading but adolescents on the contrary are not encouraged to do so because one of the aims of education is the ability to read a text without pictures (Miall and Dobson, 2001). The same was found through the study reported in this thesis which showed that according to the students, reading non-linear and on screen texts are not considered as 'proper reading'. Levy's (2011) research study also showed how even young children come to believe that picture-reading does not contribute towards a definition of proper and real reading.

Another finding which reflected that explored by Levy (2011) is the students' ability to read and understand symbols whilst using the Internet. In Levy's study (2011) young children showed that they were able to understand that 'e' stands for Internet Explorer and that the 'timer symbol' means that the student has to wait. When students in this study used their tablet in class they were able to read 'apps'. For example, when students in Grade 3.2 were assigned to take a number of photos they all knew that they had to click on the icon which showed an image of a camera. Furthermore they knew and were aware that each app and icon stood for a different purpose.

It was interesting to note that even students who did not own a tablet were aware of the meaning of such apps because they were constant users of smart phones. As Isaaic has explained, smart phones *"are quite similar to tablets... it's basically the same thing... on a smaller scale".* Isaaic, a Libyan student who joined the class half way through the scholastic year, had never used or seen a tablet before his arrival in Malta. Like the other students he did not encounter any difficulties in using the tablet. Isaaic was observed using the tablet a few minutes after he was given the device because, like the rest of the students, he was exposed to the use of smart phones at home and was able to transfer skills between these media without difficulty.

In sum, data from this study showed that the reading of images, apps and icons is becoming part of 21st Century reading and such reading was carried out alongside reading of printed text. Observations showed that students were used to this form of reading and students like Isaaic still navigated through the technological devices being used because if they could not decode the print they could understand the visual image. Visual images and icons in this context convey meaning just like print and whenever students encountered difficulties in accessing these it was also noted that students helped and assisted each other continuously. Policy makers and educators need to be aware of this type of reading in order to ensure that students learn in ways which are meaningful. Another way through which reading was observed to be carried out was through sound. The section which follows shall specifically focus on audio-reading.

5.4.4 Audio-reading

This study revealed that students felt that on screen reading promotes various types of reading styles. During one of the focus group interviews the students argued that audio-reading is a new way of reading in the 21st Century. The students interviewed also agreed that audio-reading facilitates the reading process and whilst a number of students did not regard this as 'proper reading' others have explained that audio-reading can help students who encounter difficulties in reading printed text.

Audio resources can be divided into two main categories: music and spoken word (Mackey, 2002) and audio books normally combine these together. It can be argued that the subject of audio books has not been addressed in the literature (Irwin, 2009). Through the analysis of this data however, audio-reading has been listed as a common way of reading by the young participants in this study. Some of the students interviewed explained that they make more use of audio-books rather than e-books. For example Nathan used audio-books quite frequently and explained that the audio-reading function is available on most e-books and it is rarely found in printed books. However according to Chanelle 'audio-reading' cannot be considered as formal reading because *"it is not you who is reading – you are following yes but not reading... that is more for the lazy children miss... like Nathan* [pseudonym name]*... he's always like that... he doesn't want to do anything at school".* Whether audio-reading can be considered as reading or not was a matter of debate for the students. Josef disagreed with Shanaia's argument and stated that audio-reading can still be considered as reading because *"you can read in your heart... that is still reading."*

Irwin (2009) himself an audio bibliophile, in an article titled 'Reading audio books', addresses a number of issues which the students also referred to. Irwin's (2009) article is one of the few articles which addresses the notion of reading audio-books. During the interview Chanelle explained that audio-books are for *"lazy children"* and for students *"who don't want to do anything".* Irwin (2009) addresses this issue and states that many people regard audio-books 'as a sign of an impending dark age of mass illiteracy' (p.358) whilst Willingham (2016) has clarified how audio-reading is not 'cheating'.

Irwin (2009) reported that 'pushing through' a book might be easier than reading a printed book and that society seems to presume that listening is easier than reading and what seems to be harder to do is regarded as being fundamentally better. This might be causing 'suspicion' and 'prejudice' in using audio-books. Chanelle also seemed to perceive the idea that listening is a passive activity which is likely to be carried out by the 'lazy'.

Chanelle's argument mirrored that of the literacy teacher. Ms.Vella believed that in certain aspects students in the 21st Century are becoming *"spoon-fed readers"* to the extent that *"a recorded voice is doing the reading for them*". In relation to this Carrington (2005) tackles the belief that activities such as audio-books and games give the assumption that printed text is being continuously replaced. However Carrington (2005) criticises this assumption;

> The assumption made by many of those who have never given computer games serious consideration is that printed text has been replaced with colour, music, mindless pushing of buttons and some hand-eye coordination. Even a brief experience of gaming challenges this belief. There is, in fact an abundance of printed text, but its relevance to successful interaction is less direct. (p.19)

It can be argued that data from this study has showed opposing views. Some of the children have regarded audio-reading as a *"cheating"* and *"lazy"* activity whilst others have supported the view that audio-reading can be considered as a modern way of reading in the 21st Century. Data from this study has revealed that audio-reading is also perceived as *"cheating"* and *"lazy"* by the teachers. The theme of 'laziness' shall in fact be discussed into more detail in the following chapters. This might in turn contribute to a new definition to what reading means in the digital age and teachers and policy makers need to be aware of the new forms of reading students are being accustomed with.

In contrast however, the teachers in this research have argued that audio reading is rarely carried out within the classroom setting since they did not regard audio-reading as important. One should question whether this is beneficial, since the students' exposure to different forms of reading is not being fully accepted within this Maltese context. Data such as this suggests that reading is being contested within a very traditional setting in such Maltese classrooms. Such data further revealed the importance for Maltese educators to acknowledge the full potential of digital technology in the classroom setting and use it to teach students in the best possible way, in a way which is familiar to them.

In sum, data from this study has revealed that there are various opinions even amongst the children about the extent to which listening to audiobooks can be considered as 'reading'. What is particularly interesting is the fact that teachers and some children are arguing that it is *"lazy"*. This suggests that there are large value judgements attached to this. Up to this point, the data presented in this chapter has showed that 21st Century reading is becoming more complex. Students are reading in a multidirectional way, through skimming and key word spotting. This study has also showed that students read images and listening appears to be part of this complexity. However it will be difficult for skills such as 'listening' to be recognised if negative value judgements are being attached to activities which involve listening.

Through the gathering of the data which has been presented in this chapter so far it was also noted that when reading on screen students were more collaborative in comparison to reading from paper-based resources. The section which follows will address how students were observed reading and collaborating together whilst reading on screen.

5.4.5 Collaborative and physical interactive reading

Observations revealed that the students in this study were reading collaboratively and interactively within the context of screen texts. In Grade 3.1 students' technological use was limited to computers and the interactive whiteboard whilst in Grade 3.2 students were observed reading from tablets as well as computers and the interactive whiteboard. Through observations I could compare and contrast how students made sense of text within the two classrooms. Reading in Grade 3.1 was mostly carried out through the context of books whilst students in Grade 3.2 were observed reading on screen more frequently. Data showed that in the latter context students were observed collaborating more whilst reading even when they were expected to read on their own.

This was evident through one of the observations conducted in Grade 3.2. The desks in this particular class were formed in groups of four and during a particular lesson one student from each group was asked to pick an envelope. Each envelope

had a link to an online e-book which the children had to read on their own. The students were told that after the reading session they would have plenty of time to share their ideas about the story to the other members of their group. The children were also told that one member from each group could share the story to the rest of the class. During this lesson I chose to observe a group of four children who were reading an online book titled 'A zebra called Dottie'.

The students were all observed looking at the picture on the title page before proceeding to the actual reading of the print. One of the students turned to the boy next to him and told him, *"I wonder which one is the zebra. They look kind of funny to me… and the one in the middle doesn't really look like a zebra."* The other boy nodded and smiled. Whilst the children were reading it was noted that they stopped reading at particular instances through the story and made certain remarks to themselves and others such as *"this is funny"* or *"what does 'hideout' mean?"* The students were noted to giggle at one point whilst a student also stopped to tell his friend that she could *"google the word 'hideout' to see what it means".* Another student also offered to look it up for her on her own dictionary app; *"I'll check for you on 'Dict Box'… mmm… hideout… it's a secret place, it says it's a hiding place, a hideaway".* The other two boys at the table stopped reading and seemed amazed at the fact that the dictionary app could also pronounce as well as define the words typed. One of the boys scribbled 'Dict Box' on the last page of his notebook before continuing to read.

This particular scenario emphasises the point made in the previous section in relation to audiobooks. While this is not about audiobooks, it is showing that the spoken word is part of reading in the digital context, and this is very much valued by the students and seen as beneficial to learning. It was also observed that even though the students were directed to read on their own, they were observed reading in an independent manner but somehow they were still aware of what each other was doing and seemed to enjoy the collaboration. This was evident when the students were observed asking questions to each other, reflecting, helping and assisting each other. This interplay between independent and collaborative reading was observed on a number of occasions whenever tablets or class computers were

being used. However this was not observed when the children were reading from a book.

Whenever students were asked to read an e-book or any form of text on screen, students were seen to read, process, reflect, share and sometimes also discuss the content being read. In the episode reported for example, a student shared his views on the picture found on the front cover, another explained that she did not know the meaning of 'hideout', another volunteered to help her and another also took note of the name of the app because he was impressed that the dictionary could *"actually read the words out for you".* Episodes such as these were very common when students were observed reading on screen and each time students were observed asking questions to each other and engaging themselves in very short discussions. The children themselves were also observed collaborating together whenever the reading involved problem-solving. This was observed during a particular reading activity where the children had to read a number of sentences about four children and they had to match the right Christmas presents to fit each personality and character. The students were observed collaborating with others whilst working on their own device.

This episode was observed and recorded through field notes; [Descriptive notes] "*During today's English lesson students were encouraged to carry out an activity on their tablet… I continued by asking the children to login into Fronter using their ilearn login details. I told the students to click on the link provided and explained how the game should be played; "First you need to choose one of the children's names, information about each child will be provided. Then you need to see which gifts are ideal for each child. If the gifts chosen are the right ones Father Christmas will go down the chimney and give the presents to the children... if you get a wrong answer Father Christmas will not move'. The students were encouraged to play the game on their own tablet.* [Interpretive notes] It was noted that although students were encouraged to work on their own tablet, students collaborated together in order to successfully play and finish the game. Students were observed working and discussing in small groups even though they were directed to work on their own. It was further noted that this type of collaboration was accepted by

everyone and the students were not 'punished' for not working independently. Whenever a student encountered difficulty in reading a word or understanding a sentence, students were observed asking the student sitting next to them even though I was able to assist them.

An activity such as the one described above showed that students collaborated more when they were engaged in a reading activity which involved an element of problem-solving on their tablet. Additionally, students preferred to collaborate and solve such issues with other students rather than call upon their teacher. This implies that this wider definition of reading, which is emerging from a use of technology, is actually going to challenge aspects of accepted classroom discourse in Maltese schools. Through the data collected it was also observed that all students at different reading levels were more motivated to read on screen. This appeared to be because they were assisted through their reading by their peers and because the reading process entailed an activity at the end of the reading. The same finding was gathered by Simpson et al. (2013) who stated that:

> … students tend to share ideas when working with tablets by modelling their actions to each other. Both the Canadian and the Australian example provide evidence of interaction, collaborative and participatory learning when the students read and write on the tablets. An important finding highlighted in the analysis from both research sites shows that different levels of readers (struggling and high fluency) would equally partake in touch practices together. As a result, students with mixed reading abilities were more inclined to work together with the tablets than with printed texts (p.128).

During another recorded observation it was also noted that when students read on their tablet or computer they often extended their reading to include role play with toys. This was observed when two students were watching a video on YouTube. During the observation one of the boys wanted to press the 'escape button' because he did not find the video interesting. The same student took out two figure toys and started playing with them whilst handing one of the toys to his friend. The students imagined that the toys were the same characters found on the video and engaged themselves in a role play. This episode showed how technology promoted

collaborative reading of text, which led to further speaking and listening amongst students. The screen text in this episode paved the way for a collaborative exchange, using a role play scenario. This in turn meant that the child who was previously disengaged with the text was given an opportunity to engage with the text and enjoy it. Through this situation the children crossed into the realm of imagination and cross referenced between the 'virtual' world and real life.

Additionally, when the students were engaged in reading activities on their tablets they appeared to engage with the text in a number of ways; for example, students were sometimes observed standing up to make a point. My data revealed that in particular reading in the 21st Century seems to involve a lot of touch; students were seen to tap, slide, scroll, zoom in and out, touch, click and hover over text whilst reading from the tablet. Therefore, students were seen to collaborate and engage themselves in physical interactive reading.

In contrast during book reading observations conducted in Grade 3.1 and Grade 3.2, it was noticed that students were passive readers most of the time. When students read from a paper-based resource they were observed solely looking at pictures, holding the book, turning the pages and following the print with their finger. When a student was asked to read in class the other students listened and followed and whenever children were asked to read something from the interactive whiteboard they normally remained in their seated position. It was also noted that when students were asked to read from books, there was silence in the classroom and a number of students were observed gazing around the classroom or pretending to read. This again showed that students had the tendency to read more passively when reading a book text.

It is important to note that this this study was conducted in Malta and other contexts would probably encourage more collaboration more generally. This adds an original contribution to knowledge as it shows that the students even in this very traditional and formal context are naturally challenging this formal and traditional discourse when they read on screen. Data analysis has also revealed that this has benefits for children's learning, as data clearly showed that students were sharing ideas and learning from one another. The fact that observations showed that

children were reading collaboratively within the context of screen text is especially significant, given the context of this study.

In sum, data from my study revealed that digital technology encourages readers to become active learners. Students were observed interacting through their reading, and online and screen reading motivated the students to continuously respond to the printed text. In addition, data also showed that students made use of a number of skills and these came easily to them and at no point was there the need for the teacher to explain how to use such reading paths. Whenever students encountered a difficulty they seemed to prefer collaborating and asking their peers rather than the teacher. Other skills which came easily to the students included how to use a search engine, how to narrow down the search made, how to change the tablet's general settings, how to use the camera function, how to take screenshots and how to rotate the screen.

In conclusion, data from this study has showed that students collaborated more when reading was carried out on the tablet or computer screen than during book reading. While previous literature has shown similar findings, this current study revealed that students not only collaborated amongst themselves more when working on screen but also opted to consult their peers whenever they read through technological devices. Whilst the Maltese classroom context seems to encourage students to work in a silent manner, students were praised when they shared ideas and collaborated together whilst working on screen,

Conversely, students who were observed reading from books did not speak to others whilst reading and whenever they did not understand or could not read a particular word they always opted to ask the teacher for her assistance rather than their peers. It can be argued that it is useful for children to read collaboratively in this way. Through this type of reading students were 'active' learners because they were observed discussing, analysing and solving. These are all very important skills which on screen reading promoted. It can be argued that these skills are important because reading is not simply about comprehension and fluency. When students read on screen, they were observed asking their peers for assistance and seemed more 'comfortable' engaging through reading on screen.

On the contrary, data from this study showed that students related reading from books as a more 'formal' activity to the extent that students were observed only asking the teacher for assistance rather than collaborating with each other. It would be important for policy makers and educators to acknowledge such differences and give value to on screen reading, as through this type of reading students seemed more focused, enthusiastic and made use of various skills which encouraged learning through collaboration. Having said this, the following section will show, however, how students believed that on screen reading sometimes 'alienated' the reader from the 'actual' reading of printed text. The section which follows will compare and contrast other differences which were reported in relation to reading on screen as opposed to traditional practices of reading.

5.5 A comparison: Reading on screen and traditional practices of reading

Since all students were observed reading on screen and through paper-based resources, a number of findings could be compared and contrasted. This section shall present a number of differences observed and show how these contributed towards a definition of reading in the digital age. Data from this study has already showed that book reading is considered as *"hard work"* whilst on screen reading is considered as *"more fun"* and related to leisure. The data presented so far has showed that this stems from a traditional school discourse and the Maltese context which seems to practice traditional ways of reading.

This was shown through various episodes. On a particular occasion, for example, the students referred to the notion of 'page numbers'. A paper-based book gives the children an instant impression as to how long it would approximately take to finish. On the contrary as one of the children explained *"you do not always know how long an e-book is because it does not always show the page numbers and you cannot tell how long it will take to finish".* The students interviewed also mentioned that they preferred *"thin books".* The issue here is that book reading is again being portrayed as 'hard work'. The fact that the students can physically see how long a book is when it is in hard copy is important for them but digital texts eschew this. This notion has been discussed by Mangen, Walgermo and Bronnick (2013). When readers read paper-based material they have 'immediate access to

the text in its entirety' which is built on 'visual and tactile cues' (Mangen et al. 2013, p.66), whereas readers who read on screen texts are limited to seeing only one page of text at any given time of reading (Mangen et al., 2013).

Neumann and Neumann (2014) argue that e-books differ from printed books because they use digital multimedia which supports or enhances the text presented on screen. Another difference which has been highlighted in the literature is that e-books tend to come with dictionaries and "hot" spots in animations, songs, games and interactive games, which in turn present a rich reading experience when compared with traditional books (Neumann and Neumann, 2014). Similar factors were described by Adam and Wild (1997), who reported that students making use of interactive storybooks tended to interact more with the characters and the landscape of the story since they see animation and hear sounds and speech.

While my data does support the literature that suggests that multimodal reading is 'richer' than book texts, in that it often includes a variety of modes such as sound and visuals, some students in this study have argued that *"less is more"*. A number of students like Shanaia and Chanelle have stated that the absence of too much visual stimuli, including pictures, actually enhances their reading experience.

Chanelle, for example, explained that sometimes she liked to read books which were not rich in images and pictures because these made her imagine more. According to Chanelle, when she reads descriptive text she *"imagines things in her head"*. Chanelle provided an example and referred to the time she was once reading about a monster. She reported that she was not provided with an image of the monster through the book she was reading but the description encouraged her to form a visual image of how the monster looked. Chanelle elaborated on her experience and explained that at one point after having read the book she woke up at night and she thought that she saw the monster in the corridor. This episode shows how much printed text with an absence of visual image can play an important role in the children's imagination and how the lack of images might trigger and encourage children to make up their own characters.

Furthermore, many of the texts which children read on technological devices have quite distinctive features when compared with paper-based texts namely; 'non-linear narrative structure, quite distinctive spatial layouts, on-going and cumulative challenge levels, multiple and interactive cueing systems' (Carrington, 2005, p.19). In a study carried out by Liu (2005), one of the participants mentioned that it is hard to concentrate on reading on the Internet with all the colourful or blinking graphics since these can be very distracting for the readers. This ties in with Chanelle's comments earlier about enjoying having just printed text. This underlines the issue that multimodal reading might not be for everyone. It is important to acknowledge that 'text' should include paper and screen and children should be given access to different types of resources and valued equally. However, at the moment multimodal texts are clearly not valued in Maltese schools.

Further input about reading on screen and traditional practices of reading was discussed during the second focus group interview with the following students; Antoine, Matthew, Isaaic, Marthese, Josef and Shanaia. During this focus group interview the students were presented with the following scenario; *"Imagine I have a copy of your favourite story and I have a copy of this on a book and on a tablet. Through which means would you prefer reading your favourite story?"* All the children except for Shanaia stated that they preferred on screen reading. Shanaia explained that she preferred reading from a book because *"when you read from a tablet... the battery tends to die out."* The rest of the students interviewed provided a list of reasons why they preferred to read from a tablet. Antoine explained that the tablet is normally lighter than a book and *"it also has more light which means that you can read in the dark without switching on the light... you can also read under your bed covers!"*

Isaaic reported that he could take the tablet with him wherever he wanted to and it could stand on its own whilst reading. Alan provided a different perspective and stated that he liked to read on the tablet and hear and see things at the same time. According to Alan reading like this is *"more fun*". To this statement all the children nodded to show agreement whilst Shanaia, who was not in favour of the

use of tablets, agreed that Alan might be right in his argument. Therefore, from the research conducted, it was evident that most students preferred reading on screen rather than printed text. Kolikant (2010) found, similarly, with 64% of interviewees describing books as 'boring', 'annoying' and 'using a lot of energy'. Students in Kolikant's (2010) study explained that they preferred the Internet over books because they find the Internet easier to relate to.

Data analysis revealed that reading on screen is complex and demands more than just print reading skills from the reader. The data gathered in this study is highlighting the complexity of reading on screen and has also showed that reading in the digital age is promoting physical interactions with text. However data has also showed that some students like Shanaia and Chanelle, enjoy having less stimulus and printed text alone is sometimes enjoyable. Data showed that on the one hand students were saying that book reading is more challenging because they considered all the print as tiring to read, but on the other hand students were acknowledging the complexity of different skills needed to read on screen texts, yet despite this complexity it was preferred.

5.6 Conclusion

The findings presented in this chapter have showed how students are actually reading in the digital age. Observations confirmed that students were exposed to multimodal texts as well as traditional paper-based texts. Data revealed, however, that this was not acknowledged in the participants' definitions of reading and reading in the 21st Century is becoming more complex than the definitions provided by the participants. Students were observed reading in a multidirectional manner and made use of skills such as skim reading and keyword spotting when looking for particular information on screen. Students were also observed reading images whilst listening and speaking also appeared to be part of reading in the digital age.

Data indicated that these skills motivated the students to collaborate amongst themselves and read more in comparison with linear reading. Data further revealed that these skills were valued by the students and they found these beneficial to learning because these encouraged them to share ideas and learn from each other.

These skills, however, were all observed to be used in a Maltese context where constructions of reading tended to be very traditional and formal. Data also showed that it was quite difficult for such skills to be recognised in the Maltese context since on screen reading skills were perceived as *"lazy"* and the teachers' discourse also revealed how on screen reading was not considered as 'real work' and thus was not given value.

Such findings show that we need to recognise that books and screen texts have lots of different affordances and it is not a case of identifying which is superior. Policy makers and educators need to understand what students get from all different kinds of texts so we can help them interact with lots of different texts and encourage them to meet their own individual needs. The next chapter shall now explore the findings related to writing; it examines what it is, how the participants defined it and what writing actually means in the digital age.

CHAPTER 6

Writing in a Digital Age

6.1 Introduction

Having discussed reading, it is now time to consider how children write in the 21st Century. This chapter starts by exploring students' and teachers' definitions and perspectives of writing. In addition, this chapter will show that observations conducted in Grade 3.1 and 3.2 showed that students used different skills when writing on screen and on paper-based material. Variations were observed in content, form and presentation, as the following sections will show.

Student participants were also aware of the different skills they were using on screen and how these differed from paper and pencil writing activities. Further themes such as ownership, writing as 'design', proficiency judgement and the role of touch and physicality will also be discussed in this chapter. However, in order to understand the context better the following sections will first explore the students' and teachers' definitions and perspectives on writing.

6.2 Exploring students' definitions and perspectives on writing

> There seems to be little doubt that the new digital technologies of the twenty-first century are challenging the way we think about writing. They are also changing the ways in which we do writing. The mouse on the PC, the touch screen at the cash dispenser (ATM), and the keypad on our cell phone are all writing technologies (Merchant, 2005, p.183)

Merchant (2005) argued that digital technologies of the 21st Century are challenging the way we look at writing. The literature presented in Chapter 2 seems to agree with this, however, the students in my study did not refer to technology when they were asked to define writing. In addition, digital technology did not feature in the children's initial drawings when they were asked to draw themselves during a reading and/or writing activity. The use of digital technology only came through prompting them to think more widely about constructions of writing.

During the introductory session, ten students opted to draw themselves during a writing activity, all of which featured one student or more sitting down on a chair

at a table in a classroom setting. All students opted to draw themselves in a 'sit up' position and no drawings featured what Merchant (2005) refers to as the 'lie back' or 'fall over' position. As Merchant (2005) explains, 'writing is a physical act and the writing position, or what Bourdieu (1991) calls 'bodily hexis', describes the physical postures associated with certain kinds of communication' (p.185). The fact that the students drew themselves sitting down on a chair confirms their traditional views on what 'writing' actually is. Figure 6.1 shows two examples of this.

Figure 6.1: ***Students' drawings featuring a writing activity***

Papers, copybooks, pencils and rubbers also featured in the students' drawings. This continued to confirm that students defined 'writing' in its traditional sense; that of writing words on a paper with a pencil. This was further emphasised through the definitions which the children themselves provided, some of which are presented in Figure 6.2. Once again the students were invited to explain to Zanu the alien what they understood by the word 'writing'. The definitions shown in Figure 6.2 confirm that students related 'writing' to 'pencils' and 'papers' and no direct reference was made to writing using technological devices.

"Writing is when you grab a pencil and when the miss tells you to write 'h', you write 'h' on the paper. We read and write when the teacher teaches us Maltese, English, Maths... Religion... (Chanelle)

"Writing is when you write a sentence or words on paper... for example you write 'Ola!', 'dog' or 'alien'! (Maria)

"We read and write all the time at school except for the time we are having break... break time is the only time we do not read and write." (Alan)

Figure 6.2: ***Students' definitions of 'writing'***

During the first focus group interview the students were asked to elaborate on their drawings and although all the children drew themselves writing in a classroom setting, they explained that writing is an activity which is normally done at home and school. In sum, the students' definitions and drawings showed how the children's definition of writing was aligned with traditional and school-based constructions of writing and being a writer.

Having noticed this, the students were prompted to discuss on screen writing during one of the focus groups and, whilst they were quick to accept that reading tasks can be easily done on a computer or tablet, some students were sceptical about whether they can use technology for a writing task. Steven expressed his belief that one needs to grab something to write with; either a pencil or a stylus. In fact, when Steven was asked whether he uses his tablet for writing activities, he

explained that he does not because his tablet does not come with a stylus; *"No... no, I don't... my tablet does not even have that thing you use to write with!"* This shows that Steven's idea of writing is constructed around the physical movement which is carried out when he 'grabs' either a pencil or a stylus when in reality there are numerous forms of writing on technological devices. As Merchant (2005) explains, these may include 'touchscreen technology, the stylus, mouse, touchpad, joystick and keyboard' (p.185).

The students also seemed dubious when they were asked whether typing can be considered as a new form of writing. Most students reported that typing and writing are totally different from each other whilst only two students explained that there is a continual link between the two. When asked "*are typing and writing the same?"* Matthew, for example, reported that, *"they're the opposite and different"* whilst Antoine argued that *"the written and typed – they're different because on the keyboard…on the computer you have to handle the letters or you just use the… the thing… what's it called? And if you don't have the keyboard or laptop you just use that thing and you write just the same…. but regards writing and typing…I'm sticking to Josef's idea…they're not the same".* Josef, Antoine and Matthew's ideas were similarly debated by another two students. Shanaia for example, reported that, *"they are the same… when you type or write you still use the same letters".*

After this discussion, however, the students came to agree that the main difference between writing and typing is the input process. Students have also reported that the final representation of the writing is also different depending on the media used. Josef explained that they are different because *"when you type you need to know the letters and click on them and when you write you have to do like this* [demonstrating a writing movement with the hand]*".* This issue was debated and contested during the focus group interview and this showed that 'writing' might mean different things to these children. Some of the students agreed with Shanaia's idea that, *"typing is a new form of writing"* but the majority of the children, like Isaaic, held the belief that writing and typing are not the same; *'when you write you*

need a pencil. When you type all you need to do is put your hands out like this and press the buttons".

It is evident that some of the students' ideas on writing focused on the actual process of writing, whilst only one child related writing to the end result. This shows that these children had different views on what is meant by the term 'writing'. Josef, for example, focused on the end product whilst Antoine focused on the action of writing in his definition. Students seemed, however, to suggest that typed print and print which is produced with a pencil or pen portray the same meaning but the presentation and process are different.

Another point which was raised during the interview was that writing is considered as a form of communication. As Chanelle explained, *"Well I would define 'writing' as 'another option to communicate'... if for example you want to speak to a friend and you have no telephone or mobile you can always write a letter'.* The other children who participated in the same focus group interview also shared the view that writing is a process which gives out a message; in Maria's own words; *'letters tell us a message... like 'hola!', 'cat' and 'dog'.* This shows that these students recognise that print is used to carry meaning and that writing 'can be viewed as one of many activities that occur along a spectrum of textual communication' (Dowdall, 2006, p.41). Furthermore Chanelle's definition also shows how students' popular culture is amalgamated in their way of thinking, a concept which was explored in detail in the previous chapter. When Chanelle was asked what 'hola!' meant she explained that it is a word which the cartoon character Dora the Explorer uses to say 'hello' in Spanish. Chanelle also explained that writing is related to a particular language and that people might not understand all written text because this can be presented through various languages.

At this point, Shanaia reported that the Maltese language is a difficult language to write and when she is writing a message on her mobile she is conscious that she makes a number of mistakes. Shanaia reported that she would write something like *"Aw, int kolox sew? Gej ada?" [Hello, are you ok? Are you coming tomorrow?]* as opposed to; *"Haw, int kollox sew? Gej għada?"* Shanaia's example clearly shows that when she writes on screen, in the Maltese language, she

sometimes leaves a number of letters out on purpose in order to write in a quicker and shorter manner. Chanelle also provided a similar example and argued that she is sometimes tricked to write 'cause' instead of 'because' or '2mor' instead of 'tomorrow' when writing on her copybooks at school or doing her homework. Such episodes show how on screen writing is influencing and changing children's way of writing in the digital age. Here, the students are reporting that on screen writing is promoting a 'shorthand' type of writing which can be acknowledged as a 'text speak' type of writing. This, however, will be explored in more detail in one of the sections later in this chapter.

In sum, data analysis has showed that like reading, writing for these students was defined and related to a school-based activity. Students were aware that writing conveys meaning and is a way through which people communicate. The young participants also made a connection between writing and languages whilst students like Maria showed her awareness that writing can be presented in different languages.

It is interesting to note that whilst the previous chapter showed that children acknowledged a connection between reading and digital technology, the students were very sceptical when they were prompted to discuss writing on screen. Some of the children actually stated that writing cannot be carried out on screen and that typing is not the same as writing. Data analysis also revealed that for most of these children, 'writing' was viewed as an activity which could only be carried out on paper. The sections which follow shall delve into the reasons why this was the case. However, before addressing this issue it is important to understand how the Maltese teachers in this study defined 'writing'.

6.3 Exploring teachers' definitions and perceptions on writing

The teachers who participated in this study were asked to define 'writing'. As it has been explained before, Ms.Debono believed that literacy is about reading and writing in a good grammatical manner and this raised tension with my data where children felt that multimodal writing did not always need to be grammatically accurate. Furthermore, both Ms.Debono and Ms.Vella have

elaborated on what they understood by the term 'writing' and their definitions are presented in Figure 6.3.

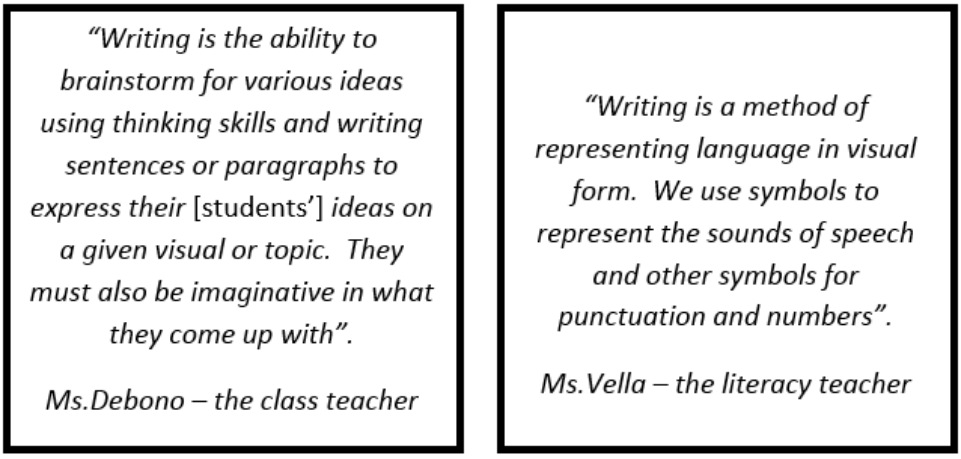

Figure 6.3: ***Teachers' definitions of 'writing'***

Ms.Debono believed that in the 21st Century, more emphasis is being given to writing rather than reading and she stated that when she was young writing was more structured and, *"everybody used to produce the same type of writing... nowadays teachers are encouraged to leave children to be creative as much as possible and students are the protagonists of their own writing... they are left to write all by themselves".* According to the class teacher, nowadays students are more involved through the writing process and brainstorming enables the writing to be based on the students' own ideas rather than the teachers'. She explained that writing is now *"less rigid"* and students are encouraged to *"make their voices heard through their writing".*

Ms.Debono further reported that writing in the 21st Century is less structured and the teacher also recalled that when she herself was young all the students used to produce the same piece of writing. Ms.Debono explained that when she was young writing at school meant that the children were asked to simply copy sentences from the whiteboard. The teacher continued by explaining that nowadays children are more encouraged to produce creative writing. According to Ms.Debono, students carry out writing tasks on copybooks, handouts or charts. The teacher also explained that children do not normally produce written work on the computers found at the back of the class. Those students who had completed their written

work in the classroom, however, were sometimes encouraged to type the sentences on a word document on the computer. This once again shows how this teacher regarded writing on the copybook as 'real work' and typing on the computer was only allowed once the written work was finished.

The literacy teacher provided a similar scenario, explaining that writing tasks are carried out on copybooks and handouts and the interactive whiteboard but computers are rarely used for writing. Ms.Debono and Ms.Vella both reported that they prefer opting for paper-based resources when they assign writing tasks to their students as they feel that this method fits with the demands of the curriculum. Given that these teachers confirmed that writing tasks at school and homework are being carried out on paper-based resources, it was not surprising that the children were sceptical when they were asked to discuss writing on screen. The students' definitions in the previous section therefore reflect the teachers' definitions of writing and again reflect a traditional discourse.

Furthermore, when the teachers were asked to elaborate on their own personal writing they explained that sometimes they struggle to write something in a formal manner. Ms.Debono gave a practical example to clarify her thoughts. In a particular situation, she was supposed to e-mail the Salaries Department to inform them that she changed her surname since she was recently married and she said, *"I stared at the computer for a couple of minutes before actually writing two sentences! I believe technology is promoting a different form of writing... writing in short form... I got so used to this form of writing that sometimes I find it very difficult to write something formal such as an important e-mail... technology promotes a fast approach to writing... writing in short and in a very fast way... and when I actually need to write something which needs to be grammatically correct... I get stuck very easily".*

It was interesting to note that this notion was expressed by the students too. The children and the class teacher reported that they felt very comfortable communicating with their friends through technological devices because this enabled them to make grammatical mistakes without any justification. All

participants seemed comfortable with making grammatical mistakes in this context.

Ms.Debono expressed her concern that she has reached a point in which she feels so comfortable writing in a short form that she fears she might write something incorrectly on the whiteboard; "*Listen...to be honest... at times... I am kind of scared that I will make some sort of grammatical mistake in class and one of the children will correct me... and the children tend to learn in a very quick manner... therefore I am very conscious when I write on the whiteboard".* The class teacher continued by explaining that when it comes to writing, students benefit a lot if they are directly involved in the writing process.

It can be noted that the students' perceptions on writing seem to mirror those presented by their teachers. The teachers' definitions of writing show that traditional practices such as writing on copybooks and handouts are being valued within this Maltese context. Additionally, the teachers explained that written schoolwork and homework tasks are never or rarely carried out on screen. On-screen activities such as typing sentences which have been previously written on the school copybook suggest that writing on screen is not as valued as writing on the copybook. This further suggests that writing on the copybook is regarded as being more important and on screen writing was only allowed when the 'real work' was done.

Given the traditional way 'writing' was defined by the participants, a number of observations were conducted in order to better understand how students were writing on screen. Observations in Grade 3.1 showed that writing was carried out on handouts, copybooks and sometimes on the interactive whiteboard and computers. Observations in Grade 3.2 provided more scope for observation because they showed how students were engaged in on screen writing and experiences such as these showed that students benefit a lot from such writing activities.

In sum, this section has showed that writing as a concept was very much linked with paper resources rather than technological. Data also showed that there was a

different value assigned to writing with the different media, even though teachers and children clearly recognised that they could and did produce text within digital contexts as well as paper. The sections which follow shall now focus on the different themes derived from the data analysis and will explain how students were observed writing on screen.

6.4 How do students write in the digital age?

The literature seems to agree that writing in the digital age has been changing due to advancements in technology. However, the literature has not addressed how students actually write in the digital age and the following sections shall specifically seek to answer this question. Writing on screen was observed to have elements of 'design'; this will be discussed in detail in the next section. In addition observations revealed that screen based writing was also strongly linked to the use of touch and included notions of physicality. Other themes such as ownership, proficiency judgement, writing for an audience and the notion of *"laziness"* in writing on screen will be explored in detail in the following sections.

6.4.1 Writing as 'design'

In order to understand how students were writing in the digital age, a number of observations were conducted in Grade 3.2. Data showed that writing on screen often involved elements of 'design'.

During a particular lesson, for example, the students in this study were asked to write a few sentences about a story called 'Carla's sandwich'. After having listened to this story on the interactive whiteboard, the students were invited to write about ten sentences which summarised the main key episodes of the story. It was obvious from the students' facial expressions that they were quite eager to start with their writing task. Since the story was accessed online, a number of students asked for the webpage in order for them to access the story on their tablet. A few children were noted listening to the story again whilst taking a number of screenshots. After the students read the story they were observed using a number of skills such as copy and paste, hovering over text, changing the size and font of text, sliding, tapping, touching and 'navigating'.

When the students were ready, the class was asked to upload their work on Fronter. The students were then asked whether they wanted to share their work with the other children in class. Three students volunteered. Their work was shown to the rest of the class on the interactive whiteboard. It was noted that all three pieces of writing were different and had different elements of 'design'. One of the texts for example involved a lot images. This particular student took several screenshots of the actual story which was narrated online and by using the copy and paste feature, these were put adjacent to the sentences written.

The second piece of writing involved a lot of print. This particular student used to love writing and it was noted that her writing involved a lot of colour. In fact when her work was shown on the interactive whiteboard, a number of students were noted to whisper and say words like; *"Wow!", "Look at that!"* and *"That looks amazing!"* This student decided to make use of direct speech in her writing and she used blue text to represent the sentences told by Carla, red text to represent the sentences said by another character with the name of Buster and green text to represent what the other students in Carla's class said.

Finally, the third piece of writing was very structured. It was typed in black whilst the title was typed in italics, bold and blue. This writing had a few pictures which were not taken directly from the story but were downloaded from the Internet. At the bottom of the story it was noted that there was a small symbol of a speaker. After this student read his work, he was invited to sit down but before proceeding to his seat he explained that he was not ready yet and invited the class to listen to his recording. He pressed the symbol at the bottom of the page and the children listened to his sentences being read by the student himself. This particular boy explained that he liked the narration of 'Carla's sandwich' so much that he decided to record his own summary so that the readers could listen as well as read his sentences. This finding ties with the findings in the previous chapter that discussed the importance of sound and listening with constructions of reading. It is interesting to note that listening and speaking have also been related to writing in the last episode.

It can be argued that writing using digital technology devices entailed a number of skills such as those described in this section. This example showed how students used different skills such as taking screenshots, using colours and including audio-recording to present their written work. What is apparent from this data is that text production on screen seemed to include many elements of creative and original design. Through this study it was noted that these skills seemed to be acquired more naturally through the use of equipment and by using digital technologies alongside older models and at no point was there the need for the teacher to explain how to, for example, copy and paste, change the font size and colour or how to access and use other different features of design.

Writing on screen has, until recently, been mainly limited to word processing facilities but writing in the 21st Century seems to be moving towards a finished product which might contain graphics, images, screenshots, photographs and quite a 'sophisticated layout' (Walsh, 2010). Findings from this study have showed that on screen writing seems to be amalgamated with elements of 'design'. Students in this study were observed making use of several features of design such as layout, order, use of printed text and the inclusion of images.

Therefore, on the basis of this data, it appears that writing on screen is moving from the production of printed text towards a more complex notion of 'design'. This appears to be not only changing the way writers make meaning but also providing greater opportunities for writers to renegotiate and reconstruct our identities (Rowsell and Walsh, 2011). This was also explored by O'Mara and Laidlaw (2011) who have described today's learners as 'creators', 'designers' and 'experts'. Young writers in the 21st Century perceive themselves as 'producers' and today's students are entering our classrooms knowing that they are 'directors' of information whilst moving away from traditional systems which perceive students as 'receivers' of knowledge (O'Mara and Laidlaw 2011). Additionally, this study has revealed that writing in the digital age is much more than producing print, but is about designing text whilst using all features of multimodality.

This was further observed during various episodes in Grade 3.2. During a particular lesson, for example, the students were observed to use Easi-Speak. Easi-

Speak is a wireless microphone which has a recording function. The user can transfer the recordings on a computer or laptop and these can be complimented with videos. After having looked for information about refugees on the Internet the students recorded themselves through Easi-Speak and the information gathered by the students was presented in a different format. The digital technology encouraged the students in this case to use it to facilitate their process of sharing information. Furthermore, digital technologies were observed offering students an opportunity to present their work in various forms, even through speech.

Observations such as these showed that reading and writing in the 21st Century are not solely limited to the definitions given by the students and their teachers. Digital technologies within the classroom setting are promoting new ways to communicate and share meaning. The students were observed sharing information through various modes and methods such as: recorded speech and videos, photos, screenshots and also through collaborating on virtual walls. In Grade 3.2 students were observed recording themselves reading, and also video-recorded themselves writing and carrying out on-line activities.

This study has showed that before starting to type, students needed to understand features of design such as changing fonts and colour text, using highlighting features and including images, photos and sound in text. The way students in this study incorporated design features in their text production suggested that 21st Century writing provides new opportunities for children to express their identity or 'performances of identity' (Thomas, 2004) in their writing.

In sum, data from this study showed that 'writing' is not just about holding a pen or pencil and writing sentences on paper-based resources. The findings from this study have revealed that for many children in this study, writing in the digital age is a complex and creative process that often involves features of design and includes practical skills such as copy and paste, taking screenshots and highlighting particular words or sentences. Although these skills were highly evident in Grade 3.2, the Maltese school system observed within the context of this study did not seem to recognise these skills as being of value. Observations revealed that students were learning how to include elements of 'design' in their writing on

screen and educators need to be aware of this exposure. In addition, teachers need to recognise the complexity of 21st Century writing and provide children with the opportunities to benefit fully from the affordances offered by technology with regards to text production.

Through the observations referred to above, the students were also noted to collaborate and interact more amongst themselves. The role of touch and physicality was also noted to be increased when students wrote on screen. The following section shall delve into this in more detail and it shall explain how this contributed towards the definition of writing in the digital age.

6.4.2 Collaborative writing and the role of touch and physicality

The previous section has shown various episodes through which writing was related to 'design'. In the observations described above it was further noticed that students collaborated and interacted amongst themselves more when writing was carried out on screen. In comparison, when students were asked to write sentences on their 'English sentences' or 'Maltese sentences' copybooks, they were observed working individually and in total silence. This situation was common for both participating classes.

In all, fourteen observations were carried out in order to understand this behaviour. During all the observations students were observed writing on handouts, copybooks, blank poster charts, computers and tablets. On one occasion the students were observed during a Science lesson and at the end of the lesson the teacher invited the children to present what they had learnt during the lesson on a very big blank poster chart. Since the students were divided into groups, the children collaborated together and they even took turns to produce different pieces of writing which took the form of titles, sub-titles, paragraphs and sentences in bullet form. Students in Grade 3.1 were familiar with a context in which writing was conducted individually on copybooks and handouts. Yet when the same students were given a chart, they also took turns in writing individually. Writing on such occasions was observed to be very stratified and sequential.

In Grade 3.2 the students were very familiar with writing on the tablet. Students were always given the option of either typing or handwriting with the stylus. It was noted that most students preferred typing rather than producing handwritten work on their tablet. The stylus was barely used by the students as most of them used the keyboard for typing on the tablet whilst the pencil grip was used for formal writing on copybooks and handouts. This study also revealed that most of the students tended to engage themselves in a conversation about what they were doing when they were creating their written text.

Constant short expressions of the following type were heard whenever students wrote on their tablet; *"How do I turn the title green?", "How did you manage to record that?"* and *"Look! I wrote so many sentences on my own! They don't even fit on one page!"* The data presented here suggests that students do not only collaborate more when writing on screen but also take pride in what they are producing. The last comment suggests that this child is pleased that he has written so extensively.

Additionally, there were occasions when students were encouraged to engage in any activity they wanted before the start of a new lesson or during break time. During instances such as these, the children were observed automatically dividing themselves into groups and using their tablets. As the photo in Figure 6.4 shows, while most students opted to use their tablet, some chose to use one of the computers at the back of the classroom.

Although I did not specify what the children could do on these occasions, nobody opted to take a book from the library or carry out a drawing activity on paper. It was also observed that the children who used the computers at the back of the classroom did so because they had a technical fault with their tablet or had left the tablet at home. Furthermore, most children opted to work in groups rather than individually.

Figure 6.4: ***Collaboration during 'free time'***

Figure 6.4 further shows that the students divided themselves in groups according to their gender. When I specifically asked why they decided to group themselves in the way they did, they explained that the boys preferred watching YouTube videos and play *"games for boys"* whilst the girls preferred to engage themselves in other forms of activities such as *"make-up and dress games".* Figure 6.4 also shows that three groups of students worked on the same tablet. The students did not mind having other children using their tablet. This confirms how digital technologies promote collaborate and interactive work. Additionally, instances such as this were never observed when students carried out activities on paper-based resources such as handouts and copybooks.

The following observation was recorded during the event described above and shown in Figure 6.5. *Five girls clustered around a tablet and played a game called 'Crossy Roads'. All girls took turns in playing the game. They provided constant feedback to each other and encouraged each other whilst playing. One of the children explained that the main aim of the game was for the chosen character to cross the busy roads. When the children were asked whether they were learning anything from the game one of the students argued that "No, because it is not educational – you do not have to read or write anything... all you need to do is use your fingers."* The corresponding photo is shown in Figure 6.5 below.

Figure 6.5: ***Students playing 'Crossy Roads'***

Another two girls were observed playing a different game titled 'Subway Surf' through which the character had to run and collect money on his way. A corresponding photo is presented in Figure 6.6 which shows that students engage with digital technology through the use of touch. When asked whether the game involved reading and writing, the students explained that reading is very minimal through such games and limited to very short phrases such as *'total score'*, *'high score'* and *'time left';* moreover the students also reported that such activities involved no form of writing. Through the same observation it was noted however that in order to pass from one stage to another the students had to answer a few questions and they had to type the answers.

Figure 6.6: ***Students playing 'Subway Surf'***

Observational reports like the ones just described show that students enjoy collaborating with each other and when they had 'free time' they preferred to play games even though they did not regard them as educational. Through these games

students argued that they were not reading and writing in any way but in actual fact they were doing both in order to finish the game observed. In addition, these observations showed that activities on technological devices involved a lot of physical touch. Students were observed touching and constantly using each other's tablet whilst engaging in text production.

Furthermore through the observations conducted in Grade 3.2 it was noted that whenever a pair or a small group of students used a tablet all the students were granted permission by the students owning the device to touch, scroll, copy and tap on the tablet. Data from this study revealed that the copybook was something which belonged to the student using it and no other student except for the pupil 'owning' the copybook could write on it. In fact during one of the observations conducted in Grade 3.1, a particular student was caught writing down the answers for his friend. Another student who observed this immediately told Ms.Debono and he was punished, *"for doing the work for others"*. This again shows that there is a big gap between what reading and writing in a digital age is and what teachers see as being 'educational. In this case it is evident that reading and writing is being carried out in a collaborative manner within the context of digital technology, but as the teachers seem to regard working alone as being 'educational' this suggests that this collaborative interaction is not valued within the school discourse.

The students in this study further explained that they loved carrying out different tasks with the use of touch. In fact the term 'touch-based learning' is also featured in a number of recent journals and educational articles. Simpson et al. (2013) explain that this type of learning 'involves the feel of objects combined with the immaterial sense of working within interface and three-dimensional software' (p.124). Research which has been conducted to date shows that children's early use of touch screen media is developing aspects of emergent literacy skills (Neumann and Neumann, 2014).

Furthermore Simpson et al. (2013) have proposed an analytical approach that shows how touch can be used for general purposes. Table 6.1 shows that children in their study used 'touch' for reading, navigation and comprehension purposes. It can be argued that the general purposes of touch shown in Table 6.1 were mirrored

in the observations which were conducted in Grade 3.2. Whilst using the tablets students were seen to use touch to look for information, move from one page to another, to play games and to zoom in and out on text and images.

Simpson et al. (2013) also coded the different touch activities observed in their study and their findings appear to parallel those behaviours observed in Grade 3.2. Simpson et al. (2013) listed these as follows: 'touch to seek information, purposive touch to play a game, perfunctory touch to move from one menu to another menu; visual-spatial touch expanding and shrinking text and other visual components, haptically driven touch when texts rely on touch to make meaning' (p.127)

Interaction	*General purpose of touch*	*Sub-elements*
Student to student learning	Explanatory (accompanied by talk) Demonstrative Haptic play	Showing Goofing around and/purposeful
Student as independent learner	Reading	Following words Expanding text Highlighting text Using app support tools

Table 6.1: ***Touch for learning***
Source: Simpson et al., 2013, p.127

In relation to this, the literature has already showed that students tend to collaborate together when using technological devices. The study conducted has confirmed this but has moved beyond what the literature has presented so far. This study has revealed that collaboration not only takes place when technology is used but it is also valued by the students involved – which is not the case with regard to the reading and writing through paper-based resources. Observations have shown how students collaborated together through reading, writing and free time activities whilst using their tablets. Data analysis showed that this collaboration was acceptable by the students themselves as well as the classroom teacher. Data further revealed that whilst it might be seen as 'acceptable' by the teachers, this is different to being 'valued'. The students were also observed using each other's

tablets on several occasions and this was considered as acceptable behaviour by everyone involved. Although students were encouraged to write on their own through their tablet, students were observed pausing at times and briefly discussing and referring to what they were writing. The same finding was not found when students were using paper-based contexts.

Data analysis revealed that there is a tension here for teachers. On the one hand teachers do recognise that the children are collaborating and that this has a place in the classroom, but they are also of the belief that technology is not 'educational' and that an educational activity is something that children do on their own. This is very important because this study is showing that the ways in which children are reading and writing within the context of technology is actually challenging a dominant discourse in the classroom – especially in Malta.

In sum, observations showed that writing in a digital context is involving a lot of touch and the children are physically engaging with the text. These same skills were also practiced when the children played games, but the children did not see these as 'educational'. The findings gathered through this study are, however, challenging this and showing that this is in fact is all part of writing in a digital age. Data analysis further revealed that another aspect which was related to writing in the digital age was 'ownership'. This, however, shall be elaborated in the next section.

6.4.3 Ownership

Data from this study has previously showed how much students liked digital technology and from the beginning of the study it was evident that students felt proud of 'owning' their own technological devices. Data analysis has revealed that 'ownership' was a common theme which emerged throughout the study. It further revealed that students did not only feel proud of owning a technological device but they were also proud that they owned their work.

During a particular Art and Craft lesson, for example, the students were encouraged to produce a Christmas tree ornament of their choice. After the lesson the children were encouraged to explain to the rest of the class what they did and

how they did it. Since the Christmas ornaments made were all different, the students were told that five pieces of work will be chosen at random. The students all produced a poster with details about their Christmas ornament. When the chosen posters were shown on the interactive whiteboard, all five students were excited and proud that their work was chosen. This was evident form their facial expressions with one student saying *"That's mine! That's my work miss!"* The same student talked about his poster which was created on screen through the use of an app and started his presentation by saying; *"So… this is my work… I've worked very hard on the poster as you can tell… it took me a long time to finish… but it was worth every minute… I'm proud of the way it turned out!"* Similar data were gathered every time students were asked to share their work with others. When students were engaged in on screen writing tasks, they felt that their digital writing belonged to them and showed pride in presenting it to the rest of the class.

In addition to this, data also showed that students did not mind making grammatical mistakes when their work was presented in the classroom context. This was evident from the same episode described above. Whilst giving one of the presentations about the Christmas ornament, one of the students noticed that there were a few mistakes and that for example the word *'material'* was spelled in Maltese and written as *'metirjel'.* The student who was presenting her work did not mind the grammatical mistakes. This was shown by her facial expressions and actions. Whilst she calmly took note of the mistakes the other students highlighted, she explained that she will go through her work again because she saved a copy and this allowed her to edit her work. This episode suggests that this student did not mind making mistakes because she was aware that the technology gave her the facility to correct her own mistakes.

This was evident in other situations. During one of the focus group interviews, for example, Chanelle explained that she used different ways to communicate through writing. She reported that one can send a message to someone either through a messaging system like Viber, WhatsApp or Messenger on their smart phone or through e-mail. It is important to note that this data was prompted when the children were asked about the ways they wrote on screen. Students further

distinguished between the different writing processes each method entailed. Chanelle explained that she was expected to write in good grammatical English and Maltese when she wrote at school and whilst doing homework. Josef agreed that when writing was done on a copybook it is was corrected by the teacher who highlighted students' mistakes in red ink. A similar episode was reflected in the literature where a student in Dowdall's (2006) study has produced a 'formal' type of text 'to satisfy her teachers and parents' whilst 'writing with her audience overtly in mind' (p.161). The students in my study further explained that they were expected to write 'the correction'. At the end of the written task the teacher wrote the words which the student wrote incorrectly. The student was expected to copy the correct word for three times in order to practice writing the correct word.

On the other hand the students reported that they used a different form of writing when they communicated with their friends. Chanelle explained that she communicated with her aunt through Viber on a daily basis and she never worried about making spelling mistakes because, *"the teacher won't be correcting it"* and because *"the technology allows spelling mistakes to be made".* Chanelle explained that she felt that the writing she did on her mobile phone was something which belonged to her and never consulted with her mother because she felt that what she wrote was personal. This ties in with my earlier argument about ownership and it further suggests that the writing in copybooks seems to belong to the teachers, yet the children seem to have ownership of on screen writing.

Research has also showed that children's use of mobile phones increases their confidence in this respect. In fact 87% of the children surveyed in one of the studies conducted by GSMA (2014) say that having a mobile phone increases their confidence and this figure in Saudi Arabia rises to 98%. In a similar study Lewis and Fabos (2005) confirmed that participants used different language styles and tones depending on whom they were communicating with.

The same was found by Carrington (2005) who observed an eight-year-old girl texting a message on a mobile phone and noticed that at no point during the nine minute observation did the little girl 'consult around the nature of her message, firm in the knowledge that this was her personal communication with the recipient'

(p.14). Furthermore this scene seems to be the norm in many countries around the world (Carrington, 2005) and for young children 'mobile phones and texting are part of the textual and social landscape' (p.15). Through such landscapes young children develop 'particular identities, literate skills and expectations of text' and they are being 'active players' in 'global flows of information' (Carrington, 2005, p.15).

In sum, data analysis showed that the students interviewed in my study were aware that there are different kinds of writing, some which demand grammatical accuracy and others which did not. Additionally, students who wrote on screen felt that they owned their writing and for this reason grammatical mistakes were accepted. It is interesting to note that in the third focus group interview the students in this research distinguished between two forms of writing. Writing on paper-based material was corrected by the class teacher and students got 'penalised' when they made spelling mistakes. Writing on technological devices sometimes promoted a short form of writing and mistakes were accepted within this context.

Data further showed that students felt as if they had ownership of their work but once it went on the Internet it was considered as part of schoolwork because it became 'formal'. For these students, 'formal writing' was assessed and as one of the students argued, this is, *"presented to an important audience like the teacher or the Internet"* whilst 'informal writing' was not assessed and was normally used with a *"friendly audience".* This shall be elaborated upon in more detail in the section which follows as it will specifically show how 'proficiency judgement' was viewed by students.

6.4.4 Proficiency judgement

As described above, this study has revealed that students felt that they owned their written work when it was produced on screen. However, data also showed that although they felt that the work belonged to them some of the children felt uncomfortable when their work was uploaded on the Internet for a wider audience to see and 'judge'.

This was observed during one of the lessons in Grade 3.2. During this particular lesson the children were invited to write a few suggestions about what could be done in order to improve the environment of the school. They were further encouraged to present their ideas through very short sentences or in point form. A particular girl was observed to be very keen to start writing on her tablet but at the same time she wanted to know whether her written task would be uploaded on the Internet as she did not want to show *"everyone"* that she did not know how to write a number of words. This particular girl approached me and specifically asked me whether her ideas will be shared with anyone on the Internet. When I asked her why she asked that question she reported that: *"I don't want everyone to see my work… There are a few words which I don't know how to spell… can you help me? Can you check my work before we upload it? Please?"* A very similar episode was reported by Matthew. As Matthew explained in one of the focus group interviews;

> *"it is not always fun to write on the tablet… well actually I do not mind writing on the tablet but not always… sometimes we are asked to share our writings on the Internet… for the teacher to correct… or for others to see… I make a lot of spelling mistakes… and I don't like sharing these too… the other students might think I am not good at writing… when writing on the copybook… on the copybook… or handout…. Only the teacher can see my spelling mistakes".*

Therefore writing on screen was regarded as *"fun"* but at the same time it put pressure on some students who were aware of the different audiences of the text produced on technological devices. In other words, for the students in this study, writing on a copybook seemed to be for the teacher, but writing on screen was generally for the student and therefore did not carry a threat of proficiency judgement. However this study further revealed that this changes when the screen text is viewed by a wider audience, because the concern for proficiency judgement then returns. The last situation described, for example, revealed that once the written work goes onto the Internet it was being regarded as part of schoolwork as it became 'formal'.

Linked with the last point, this study further revealed how students felt 'safe' in producing anonymised writing on screen. In the same classroom there was a girl who had selective mutism. She only chose to speak to two children in class and her voice was never heard. She never participated in class discussions and never shared ideas. During one activity the children were encouraged to use the Web 2.0 tool and brainstorm the topic 'summer'. The students were expected to type in every word which came to mind when they heard the word 'summer'. The vocabulary which the children typed in the box provided were automatically uploaded on the interactive whiteboard.

All answers were anonymous and this enabled all the students including those with language difficulties to participate without hesitation and fear of making mistakes. Although the student described above never projected her voice and participated in group discussion because she had selective mutism, digital technology facilitated the process for her and encouraged her to participate in the brainstorming activity with the rest of the children. Through the technology this girl did contribute as she did not have the same pressure as the child described above and therefore the pressure was reduced through this context. While this is an extreme example, it does show how the fear of proficiency judgement can be significant for a number of children, however, creative use of digital technology can help children to not only write, but share their writing without this fear being manifest.

Martin (2014) found that online communities such as the one used by the students in the scenario described above can lead to greater degrees of informality and therefore students are exposed to a transparent and open environment. The students in my study seemed happy to engage themselves in writing on screen but some of them were aware of the larger audience who could read their work and it showed that students were aware of the 'formality' once their work reached the Internet. Furthermore, students who did not feel confident sharing their work online showed some anxiety and during one of the focus group interviews such students reported that they did not always feel confident sharing their written tasks.

When these students were observed during their writing tasks, it was noted that they used other means to help them with their writing such as spell checkers, the online translator and an online dictionary. As some of the children reported, these were used in order to ensure that their work was of good quality. It further showed that the fact that their work was viewed by a larger audience motivated them to make the best use of technology in order to produce work which is grammatically accurate. The copybook did not have this facility and therefore digital technology encouraged the students to look for other means which helped them produce text without grammatical mistakes. This shows how 21st Century learners were aware of the resources available and used these to produce accurate work when the situation demanded it.

In conclusion this section has showed how the different modes of paper and screen are perceived differently in terms of ownership. The students in this study felt that they owned their written work when this was produced on screen and they felt that work on the copybook belonged to the teacher. Since much of the classroom writing on paper was considered to be for the teacher rather than the student, then this raised issues of proficiency judgement. Data further revealed that this changed when screen writing was uploaded on the Internet and proficiency judgement returned within this context.

Data analysis also showed how proficiency judgement was connected with grammatical accuracy. This suggests that teachers need to capitalise on this and afford children opportunities to write in contexts that are free from proficiency judgement on occasions. However children also need to have opportunities to write with grammatical accuracy. The results of this study suggest that as children have more of a sense of ownership over their screen writing in comparison with their copybook writing, then this may be one way to help children to write with accuracy. In addition, the features within technology, such as spell checks and online dictionaries also help children to make changes to their writing, therefore indicating that published screen texts could be beneficial for many children.

In sum, the main findings in this section have shown how students responded differently when they were asked to carry out written tasks on screen as opposed

to paper-based resources. These were not only mentioned and observed by the students but the teachers in this study also viewed on screen writing and traditional writing on copybooks as different whilst claiming that on screen writing is promoting *"laziness"* in students.

6.4.5 The notion of *"laziness"* in writing

The section above has presented a strong argument for children to write on screen. Even though the students might still fear proficiency judgement, the act of writing on screen for a wider audience can encourage both accuracy and a sense of ownership that is not necessarily available in copybooks. Data from this study suggested however that one of the reasons why teachers may be resistant to children writing regularly on screen is situated within the concept of 'laziness'.

According to Ms.Debono the use of computers and tablets is promoting *typing* rather than *writing*. Ms.Debono reported that she regards typing and writing as two different activities and that traditionally speaking, formal writing is normally carried out through the use of a pencil and paper. Ms.Debono explained that typing may not necessarily be healthy because *"it makes children lazier".* Ms.Debono reported that it is important for students to learn how to write and that good handwriting skills still need to be given a lot of importance in the 21st Century. Ms.Debono also explained that parents consider neat handwriting to be an important element of schooling. The Maltese curriculum further emphasises the importance of handwriting and suggests that by the end of the scholastic year all Grade 3 pupils should be able to write in neat cursive writing.

The same idea was expressed by the literacy teacher who was also interviewed about her views on writing in the 21st Century. Ms.Vella said that *"when it comes to writing, handwriting skills are getting a back seat"* and students "*have become lazier and not too attentive to spelling. Handwriting as I already said has taken a nose dive".* This data suggests that these teachers consider handwriting to be a very important skill, whilst typing was considered as *"lazy"*. In addition, the teachers' and students' perceptions reflect the Maltese curriculum which emphasises the importance of neat handwriting but up till now has never

recognised the importance of striking a balance between different types of writing skills.

The theme of "laziness" has also been discussed in the critical Literature Review in Chapter 2. Students in Kolikant's (2010) study expressed their belief that their generation is lazier compared to students from previous generations; they explained that when they are given a task to do or a summary to write they go to the Internet whereas before students read more since there was no computer. According to the same study, 32% of the students interviewed believed that they are better than students of the pre-ICT generation whilst 68% thought that students in the post-ICT generation are not better students. Some of the students interviewed in Kolikant's (2010) research believed that the school was responsible for this situation whilst the majority of the students blamed their 'affinity to ICT as the cause' (Kolikant, 2010, p.1388).

According to the teachers in my study students are having easier access to information. However they have argued that writing on screen is making students more *"lazy".* Data analysis further revealed that students are exposed to reading and writing in different ways and when these are conducted on screen, they are perceived as 'lazy' by some, including the teachers in this study. This is because students are not using texts in the same way as before and therefore learning is carried out through new ways of gaining information.

Data from this study has already showed how students are writing differently on screen in comparison with paper text and that 21st Century writing involves a lot of physical involvement such as scrolling, collaborating, touching, swiping, making use of skills such as copy and paste, taking screenshots and including images and photos alongside with printed text. In addition, this chapter and the previous one have elaborated on the 'different' ways that students are reading and writing today. However students, teachers and parents within this Maltese context only saw traditional practices as being valued and at no point were 'new' practices seen as adequate or 'educational'. Another concept which was related to "laziness" by the teachers was the spell check feature which most digital technological devices have.

During the third focus group interview in the study reported in this thesis, the students explained that they preferred typing on a word document because the technology *"automatically underlines your spelling mistakes in red and it tells you how you are supposed to write".* According to Ms.Debono this type of writing is making students *"think less"* and hindering the learning of writing. Therefore the teachers sometimes saw technology as being a negative influence on writing, yet the students reported that they value features such as a spell check and this supports their ability to write with accuracy. McGlashon (2000) supports this and points out that grammar checks are making a significant contribution to helping children to express themselves fluently. This shows that there is a strong tension for children learning to read and write in schools today, especially in Malta. This is because while they are capitalising on the affordances of technology in their reading and writing, they are being made to feel as if this is not authentic and their skills are not of value.

Another feature which the teachers linked to 'laziness' was 'trial and error'. It can be argued that trial and error does not sit comfortably with traditional constructions of reading and writing where students are expected to 'get it right' at the first attempt. Students in this study have showed however that they *"loved"* technology due to the 'trial and error' function. This further suggests that digital technology is influencing and challenging traditional constructions of reading and writing as it is motivating students with all learning styles to *"keep on trying until they get it right".* This was expressed by the students themselves, when Nathan for example described himself as a child who loves to play online games. Whilst he identified that there are a number of different games which can be played on the Internet he explained that the ones he likes best are those which *"let you try until you get it right".* Nathan, like Josef, explained that sometimes he hates it when he is not given enough chances and that he prefers to play games which enable the player to have *"plenty of chances".*

This was evident during a number of observations. During a particular observation for example, Ms.Debono made use of a PowerPoint presentation in order to teach students that not all objects produce a sound. Each time the teacher showed a new

slide to the students they were invited to approach the interactive whiteboard and click on the images which did not produce any sounds. Whenever the students got one wrong a pop-up slide told the students that the answer was wrong and invited the students to 'Please try again'. When the student got a correct answer they got a 'Well done' or 'Super work!' message. The interesting point here is that students did not seem to be disheartened when they got the 'Please try again' message and continued until they got the answer correct.

This shows how the technology allowed for a 'trial and error' strategy to be implemented when students made a mistake. According to the children in this study, this was preferable to the teacher's red pen correction on copybooks. The students explained that this was because once the copybook was collected by the teacher for correction they were rarely given the opportunity to 'fix' their mistakes. The red pen symbolised 'getting it wrong' whereas the trial and error function seemed to promote a sense of 'not this time – try again'. As a result, children seemed less concerned about making mistakes. In addition, the children felt they had more ownership of their screen writing and were motivated to 'get it right'.

The literature has showed that 'trial and error' assists those students who find it hard to accept failure or correction but tend to accept correction from a computer (McGlashon, 2000). The literature also shows that the concept of 'trial and error' might inspire students to try again to achieve a good result (McGlashon, 2000). This study has built on these findings by not only explaining the link between 'trial and error' and digital technology, but showing *why* trial and error can be useful for children in promoting text production. This study has suggested that while writing that is produced on paper is often regarded as a 'final copy' that must be accurate, technology actively encourages a 'trial and error' approach therefore accepting that several attempts at accuracy are part of the process. In other words writing on screen appears to encourage children to keep on trying until they 'get it right' in a context that is free from proficiency judgement.

In sum, this section has explored the ways in which screen writing supports children in not only being motivated to write, but in writing accurately. This was evident when the students' work was published to a wider audience. Students were

observed using the facilities of the technology in order to publish accurate writing. Some of the strategies for this were by using 'trial and error', spell checks and online dictionaries and translators. However, like many other findings in this study, it is illuminating a huge tension with teachers and the school discourse. This is because writing in this way was seen as being 'lazy' by the teachers interviewed. Whilst this section has showed how concepts of laziness were perceived by teachers and how this influenced their perceptions of reading and writing, the next section will highlight further findings and differences in writing on screen and on paper-based material.

6.5 A comparison: Writing on screen and on paper-based material

Since observations were conducted in two different classes with varying degrees of access to technology, the study was able to explore differences between students' writing on screen and on paper-based materials. Amongst the differences, it was noted that when writing occurred on screen, students tended to include visual images and sound. Writing on screen was more 'original' in terms of presentation form but was not always regarded as 'real work' by students and parents.

When writing in their copybooks, the students were observed working on their own and writing lessons were very similar in the way they were taught. During one of the observations, for example, Ms.Debono started the writing lesson by writing the main aim of the lesson on the whiteboard which was '*to write a few sentences about our Christmas holidays'.* She continued by writing the title in the centre of the whiteboard *'My Christmas holidays'* and asked the children to provide her with ideas related to this title. Whilst the children were brainstorming the teacher jotted down some of their ideas, drew little clouds around the title on the board and formed a plan for writing.

The students were then invited to write a few sentences about the title on their copybooks and those who were ready before the rest were encouraged to take a small piece of paper from the teacher's desk and draw something which was related to the sentences written. The students were encouraged to stick their drawing at

the end of their written work. Some of the children were observed showing their drawing to the student sitting next to them. This was always done in silence. Once the children were ready, they put the copybook or handout on the teacher's desk for correction. Writing lessons in Grade 3.1 were all very similar to this format.

Writing lessons were very different when technology was used. In Grade 3.2, most writing tasks were produced on a program called 'S Note' on the children's tablets. S Note is an app which was pre-installed on the children's tablet and is a practical way for students to write handwritten or typed text. This app enabled the children to change the font, size and colour, insert images and also include links to videos. Therefore the presentation of the written task was different from those of the other class observed and at times also included a use of multimedia. When asked to complete a particular writing activity, students spontaneously included visual images when writing digitally, in comparison with writing on paper.

The following figures show a few examples of this. Figure 6.7 shows that text has been presented in typed format. The student also complimented the sentences with an image and also chose to circle the title in a different colour to express its importance. This screenshot shows that although the format is very similar to a copybook and has lines in the background, the student chose to type his sentences rather than use the stylus for writing.

Figure 6.7: ***Sentences about 'Summer'***

Figure 6.8 shows a different form of writing – brainstorming through an online website. In this activity students had to type different colours and these were

projected on the interactive whiteboard for all the class to see. These were anonymous and the children felt confident to participate. This was evident from their behaviour and enthusiasm when the children were directed to start the activity.

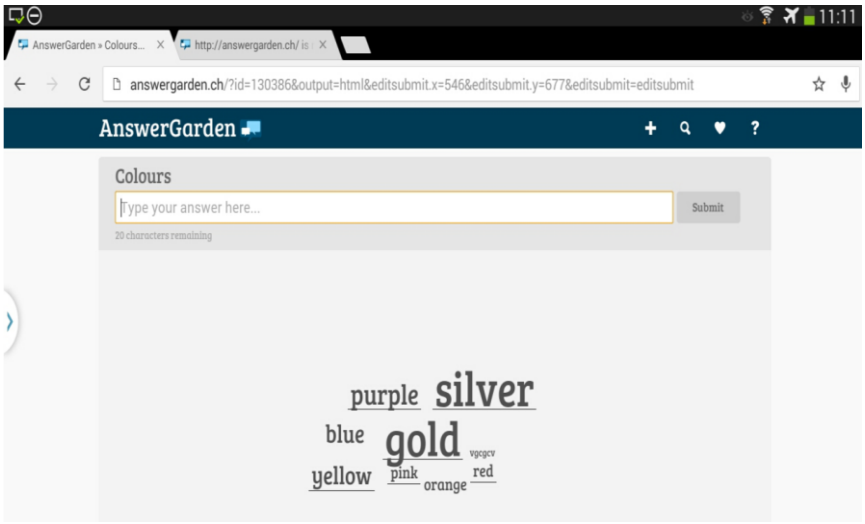

Figure 6.8: ***Brainstorming activity using AnswerGarden***

Figures 6.9 and 6.10 show how writing in the digital age is including a lot of images. Additionally, both figures show how writing is related to a context. Figure 6.9 shows a number of sentences using prepositions whilst the corresponding photos give meaning to the sentences. Figure 6.10 shows photos of objects found around the school which are lighter and heavier than one kilogram. Whilst students could have easily written down a list of objects under each category, taking photos was more meaningful because digital technology gave the students the opportunity to make connections and learning occurred within a context.

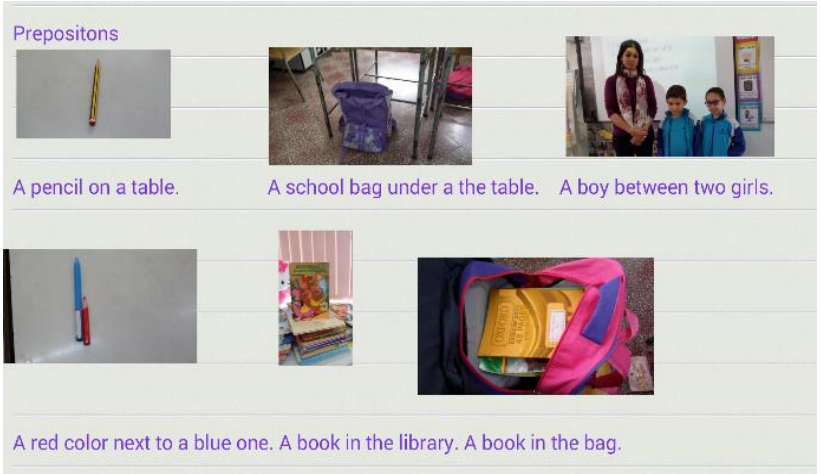

Figure 6.9: ***Writing sentences with prepositions***

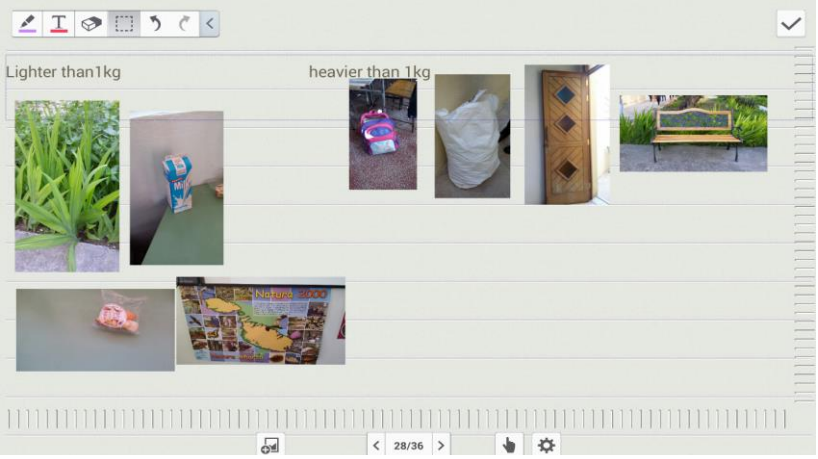

Figure 6.10: ***School treasure hunt – objects lighter and heavier than 1 kilogram***

Additionally, this study showed that the writing prompts used in Grade 3.1 were titles such as 'My best friend' and 'My family' or picture sequence cards. In Grade 3.2 writing prompts varied and students were also observed writing sentences after watching an informational video on YouTube, reading through an online article or after conducting an interactive online activity. During the 'One Tablet per Child Pilot Project' students were asked to present most of their work on their tablet but also on their copybooks at times. This was done for a number of reasons.

As a teacher I found it quite difficult to correct and assess the students' written work because this meant that I needed to view their written tasks on the laptop and since the laptop was very slow, correcting students' work took a lot of time. As a teacher I also feared that parents at home might not regard typed work as formal writing and therefore question the 'learning'. Having said this, it can be argued that not only educators need to acknowledge the benefits of reading and writing on screen but also parents. It is important for parents in Malta to recognise the value and affordance of digital technology. Parents in Malta do not seem to recognise typed script as authentic and want to see children writing with pencils or pens.

It was further observed that when students were given writing tasks to do on their copybook as homework all students got it back the following day. On the contrary when students were asked to produce writing tasks on their tablet not all the children carried it out at home. When the students were asked about this, some of them explained that their parents did not regard work on the tablet as homework.

This confirms that for these Maltese parents, writing on screen is not regarded as 'writing'. As one of the boys reported, his parents at home *"do not fuss over homework carried out on the tablet".* The same student who reported this also explained that he regards homework on the copybook as more formal and important. This study revealed that it was not easy to get students and parents acquainted to writing on digital technologies for educational purposes.

The same concern was raised by the teachers. Both Ms.Vella and Ms.Debono explained that they rarely ask children to produce writing tasks on the computer or tablet at home and they have never told the students to upload their work on Fronter. This is because the class and literacy teachers believe that parents would not approve and do not regard work carried out on such devices as *"real homework".* According to Ms.Debono, the parents are so used to the idea of copybooks and handouts that *"it will take a very long time for them to accept the fact that the same work can be done on a computer or a tablet because these are normally associated with entertainment rather than learning".*

In relation to this, within the Maltese context, parents still seem to regard handwritten work as more important than work carried out on screen. This was expressed by Ms.Debono and Ms.Vella who also reported that since written and typed work are assessed differently and at times work on screen is not assessed or not assessed in the same way as writing on paper, then often it is not valued by the parents. This might be the reason why students and parents have regarded homework on the tablet as being less important. O'Mara and Laidlaw (2011) also provided their insight on this matter and argued that technological tools tend to be "domesticated" once they are translated into the classroom environment. According to O'Mara and Laidlaw (2011) this might be creating a student engagement and practice barrier. In such scenarios teachers need to become more familiar with the environment used at home in order to build upon these experiences further (Marsh, 2005).

Another common perception which emerged throughout this study is the connection between paper-based resources as being perceived as highly educational whilst technological devices are regarded as being more 'fun' but less

educational due to their untraditional form. This perception was also shown through a 2012 study conducted by the Joan Ganz Cooney Centre which confirmed that parents and early childhood educators tend to choose printed books to read to children as opposed to screen reading.

This notion was expressed by Ms.Debono and the students themselves and it was observed that even the school and home discourse seemed to affect this. Students reported that at home their parents often used a different discourse which shows that paper-based material is regarded as more important than on screen activities. Furthermore data analysis showed that perceptions of reading and writing for these students are also highly influenced by the domination of school discourse.

Further through this study the students were asked whether they preferred writing on a copybook or on a technological device. They all explained that they preferred to carry out written tasks on the computer or tablet because the presentation of their work was neater and because they had more fun due to the fact that the technology enabled them *"to be more creative".* When I asked them to elaborate on 'creativity' students explained that they liked the fact that they could change the font's colour and size and that the presentation of their work was unique.

When I observed the children's writing I realised that through the typed sentences children made use of different font sizes to emphasise importance. Most children made use of a larger font for the title and sub-titles. Important vocabulary was also underlined and written in bold. On a particular occasion for example students were guided to write a number of sentences about a set of pictures provided. The sentences were provided to the children however some of the words were left out and the children were expected to fill in the missing word. It was observed that most students chose to write the missing words in a different colour, in bold or underlined them. When the students were asked why they did this they reported that underlining, changing the colour and font and using the bold function emphasised the importance of the words chosen.

When students wrote their sentences on the copybook or handout they did not make use of such skills because the resource, the paper in itself, did not enable the writer

to do so. In fact, such pieces of writing were quite similar to each other; the only difference was the style of the individual handwriting. On the other hand the typed sentences were all very different and therefore each student provided a unique piece of work. Whilst some of the literature has showed that digital technology destroys creativity (McLaughlin, 2014) this study has showed otherwise. The students were happy to present unique and creative work and reported that they enjoyed experimenting with the technology whilst writing.

Through the class observations it was also highly evident that the children who produced the written task on a technological device seemed more willing to start writing. This was noted through the children's facial expressions and eagerness shown whilst taking their tablets out from their school bag. The following extract is taken from the interpretive notes kept of a particular observational session; *"The students were observed to rush into taking their tablets out of their school bag. Some of the students had their tablet under their desk. When they were instructed to take their tablet out and switch it on, it was noted that the students did this with a lot of enthusiasm. This was evident through their facial expressions as well as verbal expressions of the type; "yesssss!" and "finally!" Students who had forgotten to charge their tablets or had a flat battery expressed signs of disappointment. One of the students was heard stating "Oh no! How am I supposed to do my work now?"* Expressions such as these confirm how these students enjoy working with digital technology.

Through the facilities of digital technology students were collaborating in the classroom and also outside of the class. Through Fronter students were able to view their friends' writing tasks and could also respond to it, provide feedback and opinions. This was observed when one of the students in class informed his best friend that he read all about his hobbies on the Internet. The student continued by explaining that he read his friends' writing at home which in turn brought up a discussion with his mother about whether he should start going to football training just like his best friend. This shows how writing on digital technologies can promote a number of follow-up activities such as further discussion, comparison

and reading and that 'virtual space and real space can be seen as heavily interdependent rather than separate' (Dowdall, 2006, p.158).

Throughout the interviews and observations the students and teachers all seemed to agree that writing on screen and on paper-based material is different. The two main differences highlighted pertained to both the process and the end product. Students explained that writing on screen is normally done with the stylus, tapping or typing whilst writing on paper is done through a pencil, pen or marker. Another difference which was highlighted by the students in relation to the process of writing was 'display and layout'. During one of the focus group interviews the students reported that when they carry out handwritten tasks on their copybooks they use their pencil and underlining with the ruler *"when something is very important".* The students also explained that writing on copybooks had to be neat and that the respective teachers reminded the students to produce neat work right before they start their work.

Conversely, students who wrote on their tablets reported that the teacher was more lenient, let them use coloured and different font and praised those students who had an original layout. Data from this study showed that students felt that the teacher was less strict in correcting written work on screen, and they also reported that this motivated them to write and that it had a positive impact upon their self-confidence. This was also directly expressed by one of the students during one of the focus group interviews who argued that typed work was never corrected in red ink and that students were never penalized for not presenting neat work.

Therefore it can be argued that from the students' descriptions, writing on copybooks was more formal and traditional whilst writing on their tablet was considered as more fun due to the various ways the visual representation can be differed and valued differently by teachers. Data from this study revealed that the students felt that teachers valued consistency and uniformity with regard to the writing of paper texts, and valued creativity and individuality within the context of writing within technological media. This was put forward by Shanaia who stated that *"the teacher does not really fuss about correcting our work on screen, the thing is that it is impossible for the teacher to print our work which is uploaded on*

Fronter… if this had to be done… a lot of printer ink would be wasted… I prefer to listen to my feedback rather than having the teacher correcting it in red".

In short this section has highlighted various differences when students carry out written work on screen and using paper-based materials. Written tasks on paper are considered to be more formal by students, teachers and parents, whilst writing on screen is considered as less formal, more fun and less rigid by students. Although the literature has shown that students are more motivated to write on screen, this study revealed that this is not always the case and a number of students reported that they felt pressured when their writing tasks were shared on the Internet. This study also showed that in such instances the students made the best use of digital technology to improve their writing whilst using spell checkers and dictionaries.

Data from this study also revealed that the students were aware that on screen tasks can be easily accessible and read by a larger audience as opposed to written tasks on copybooks. This study has shown that students were highly aware that sentences on their copybooks were only viewed by the student, the teacher and sometimes the parents in cases when the copybooks are sent home. On the other hand those students who produced written work on their tablet within the classroom or home setting knew that they could easily upload their work on Fronter and that would mean that the audience is larger.

This study has also challenged some of the literature which argued that technology 'kills' creativity (Greene, 2015). This study has shown that when students wrote on their copybooks, the presentation was quite formal and all of the students' writing seemed to be similar, yet when students carried out writing tasks on screen, the presentation was unique and the students were praised whenever they presented an original piece of writing. The students also reported that the technology invited them to be more creative. These findings get to the heart of what 21st Century writing actually is and how writing within digital contexts is different to paper-based contexts.

6.6 Conclusion

In conclusion, this chapter has explored writing in the digital age. It started by exploring the participants' definitions of writing. Although the definitions were highly linked with paper resources, observations revealed that students were also writing on screen. This chapter has showed that writing on screen and on paper were given different value by the participants even though writing was observed to be carried out on different resources.

It was apparent from this study that writing on screen involved a lot of physical touch and students also made use of several skills in order to complete their writing tasks. The students' on screen writing was also observed to include visual elements like photos and drawings, and also sound. In addition, the writing produced on screen included many elements of original design and creativity. This chapter has further elaborated on 'collaboration' and the findings discussed in the previous sections showed how this was only evident when students worked on screen and how it was valued by everyone.

Further through this chapter, data analysis showed how writing in the digital age is linked to 'ownership' and how students were proud that they owned their work. In addition to this, data also showed that students did not mind making grammatical mistakes on screen but were also aware of the different audiences. In fact, when their written tasks were shared on the Internet, the students were observed making use of various skills in order to ensure accuracy in their writing before publishing their work. This tied to the notion of 'proficiency judgement' and although the students in this study made use of various methods in order to ensure accuracy, these were perceived as 'lazy' by the teachers.

This is creating a tension for teachers as it challenges traditional constructions of writing. This further implies that educators in Malta need to move away from traditional practices of writing and ensure that writers are exposed to various ways of writing. It is important for the Maltese education system to encourage educators to strike a balance between different methods of writing in order to ensure that the students' best potential is reached in ways which are meaningful.

In conclusion, the findings presented in Chapter 5 and 6 get to the heart of what 21st Century reading and writing actually are and how digital contexts are different to paper-based contexts. These findings have further showed how reading and writing are being intertwined together when carried out on digital technologies. The following chapter shall elaborate on this in more detail.

CHAPTER 7

Reading and Writing: A New Conceptualisation

7.1 Introduction

In Chapter 2 the Literature Review presented a critical review of 'reading' and 'writing' and showed that definitions of the terms have been changing over the years, and that the birth of new digital technologies has generated particular change. In addition, as Dowdall (2009, p.92) points out, 'as technologies evolve, the possibilities for children's text production expand'. UNESCO's definitions which were outlined in Figure 2.1 showed a clear example how the definition of 'literacy' has been modified throughout the years. Although the literature presented in Chapter 2 has shown that literacy is changing due to digital technologies, what reading and writing mean now has been under researched, especially within the Maltese context, and this was the main aim behind this study.

Learning to read and write in the 21st Century occurs through understanding, viewing, responding to and interacting with digital texts and multimedia (Walsh, 2010). As it was shown through this study, students in Grade 3.2 who were constantly using digital technology read and wrote through various modes. The processing of modes, such as images and sounds were observed to be continuously used through the students' reading and writing activities. In the previous chapters the difference between reading and writing on screen and paper-based modes has also been distinguished. It is imperative that educators are aware of such differences and that knowledge of both is developed so that learning experiences are rich (Neumann and Neumann, 2014) and of benefit to students who are living in a digital world.

Recent literature and research has also investigated whether 'basic' skills for reading and writing on print-based texts are different from on screen reading and writing (Kress, 2003). The observations within two different classes in this study have provided a rich opportunity for this to be explored. During the observations conducted in Grade 3.1 and 3.2, language and literacy practices of reading and viewing, writing, listening and speaking emerged through the use of digital technology. In Grade 3.2 where digital technology was used more frequently, reading and writing normally involved speaking and collaborating. Like Walsh's

(2010) study it was also observed that reading encouraged discussion or writing, while writing encouraged talking, listening or further reading.

The literature seems to agree however that a new definition of reading and writing needs to be envisaged in the light of new technologies and within current curriculum contexts since technological developments are impacting on literacy education (Walsh, 2010; Kress, 2003; Lankshear and Knobel, 2003). Skills such as skim reading and using hypertext and hypermedia have been promoting 'a vehicle' that will change literary reading and ensures fundamental changes in both reading and writing (Miall and Dobson, 2001). It is also important to be aware that learners in the 21st Century are being exposed to texts which are changing due to developing digital technologies and this needs to be recognised within the school system (Levy, 2011) as 'new technologies are now strongly impacting on, and shaping, literacy practices for all ages' (Levy et al., 2014, p.4).

The study reported in this thesis has also found that digital technology is having a significant impact on how students are 'reading' and 'writing'. Despite there being a vast amount of literature on 'digital literacy'(Marsh, 2005; Kress, 2003) and in understanding how digital technology effects students' reading and writing (Barone and Wright, 2009; Dowdall, 2006) there has been very little on understanding what the terms 'reading' and 'writing' are coming to mean as we enter further into the digital age. This is one of the ways in which this study is providing an original contribution to knowledge in the field.

This study has revealed how reading and writing in the digital age were observed to be intertwined together. At times students could not distinguish between reading and writing activities when these were carried out on digital technological media. The findings reported in this chapter will indicate that with the birth of various digital technologies 'reading' and 'writing' appear to be becoming more closely connected and there appears to be a developing synergy between the two. This shall be explained in more detail in the following sections.

7.2 Exploring a new approach – An interrelationship between 'reading' and 'writing' through the use of digital technology

Through the analysis of this study, data has showed that at times students referred to reading and writing as two activities which could be conducted together. This was shown by Chanelle and Alan who both argued that sometimes they got so engaged in all the different functions of an online educational game or e-book that at the end of the activity they realised that they had made use of reading and writing skills at the same time.

As Chanelle explained *"sometimes I get so lost in the game the teacher tells us to play that at the end of it I'd notice how much I have practiced reading and writing… sometimes even at the same time... like you have to read the directions given in order to carry out a written task and you need to read what you wrote in order to see that it makes sense."* Here this student is showing how digital technology is amalgamating reading and writing together and students like Chanelle are recognising that they are making use of both skills simultaneously to carry out activities on screen. Observations revealed that activities such as these were especially common in Grade 3.2.

During a particular English comprehension lesson, for example, students were invited to read information about Florence Nightingale through a PowerPoint presentation. Following this the students had a list of multiple questions. The students had to read the questions from the interactive whiteboard and write the correct answer on their Nintendo DS. This episode shows how once again digital technologies are strengthening the relationship between reading, writing and the use of technology. Figure 7.1 shows an example of one of the questions which was presented to the students on the interactive whiteboard whilst Figure 7.2 shows an example of one of the student's answers presented through his Nintendo DS.

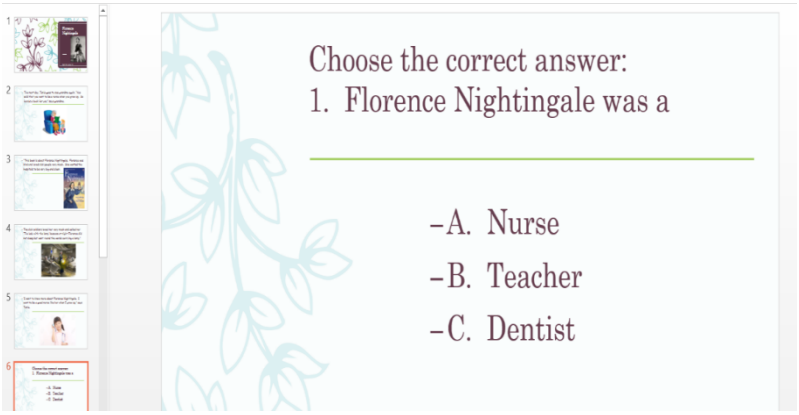

Figure 7.1: ***One of the multiple questions presented to the students through a PowerPoint presentation***

This episode shows that students had to first read the question, then write their answer on the Nintendo DS. As Figure 7.2 shows, the digital technology used encouraged the students to also read the answers presented by their friends. Through the use of digital technology, reading and writing were seen to overlap and were intertwined in a way that it was hard for students to distinguish whether this was a reading, writing or technological activity, or whether this activity was in fact a combination of all three. It can be argued that although the data here are suggesting that reading, writing and technology are intertwined this can also be seen from the findings reported in the previous chapters.

Figure 7.2: ***One of the student's answers to the question presented in Figure 7.1***

Whilst documents such as the 'Literacy Dictionary' (2007) have described reading and writing as two separate skills, this study has however revealed that the use of technology may be starting to bring these skills closer together in ways that have not been previously apparent. The students in this study related reading as being associated with books and words whilst writing was associated with the use of pencil and paper in text production. Some of the students distinguished between reading and writing in that they reported that they preferred 'reading' to 'writing' because it is less tiring. However 'rapid changes in digital communication provide facilities for reading and writing to be combined with various and often quite complex aspects of images, music, sound, graphics, photography and film' (Walsh, 2010, p.211).

Although all the students defined reading and writing in a very focussed and traditional manner at the beginning of the study, observations revealed that students were making a combined use of reading and writing skills at the same time. The students came to this realisation when they were prompted to think more widely about reading and writing on screen. In other words, data analysis revealed that through the use of digital technologies, reading and writing were amalgamated and connected together.

Another practical example of this was through the children's use of virtual worlds. One of the students for example reported that he makes use of 'The Sims' whilst other students have referred to virtual games which encourage the players to take care of a pet. In such a scenario students explained that they are expected to read text, read images and also communicate online with other participants through typing. This shows how students are amalgamating concepts of reading and writing in order to achieve the results they wanted. However within this Maltese context, online activities such as virtual worlds were not valued and students were only observed engaging in virtual worlds during their free time. It is important for educators to investigate and be aware of such play activities given that they appear to 'resort to outright dismissal of its value' rather than investigating its positive and negative aspects (Marsh, 2010). This study supports Marsh's (2010) claim that;

> These virtual worlds are fast becoming a part of the online landscape of play for young children and rather than dismiss them as irrelevant, or deride them as potentially harmful environments, academics and educators need to examine their affordances more closely in order to identify what children gain from their playful engagement in these worlds and how their experiences can be built upon in early years settings and schools (Marsh, 2010, p.36).

Another practical example which revealed how digital technology combines reading and writing together was through the use of Padlet. Padlet can be described as a virtual wall through which students could express their thoughts, comment or reply to any question given by the teacher. Padlet was used frequently in Grade 3.2 and the students' answers were always shown on the interactive whiteboard - through such activities students could add images, sounds and videos to their contribution. Figure 7.3 below shows an example. The figure shows some of the students' feedback on one of the books read in class. Padlet in this case was used as a brainstorming activity and the students had the facility to read their friends' comments and share their own thoughts about the story read.

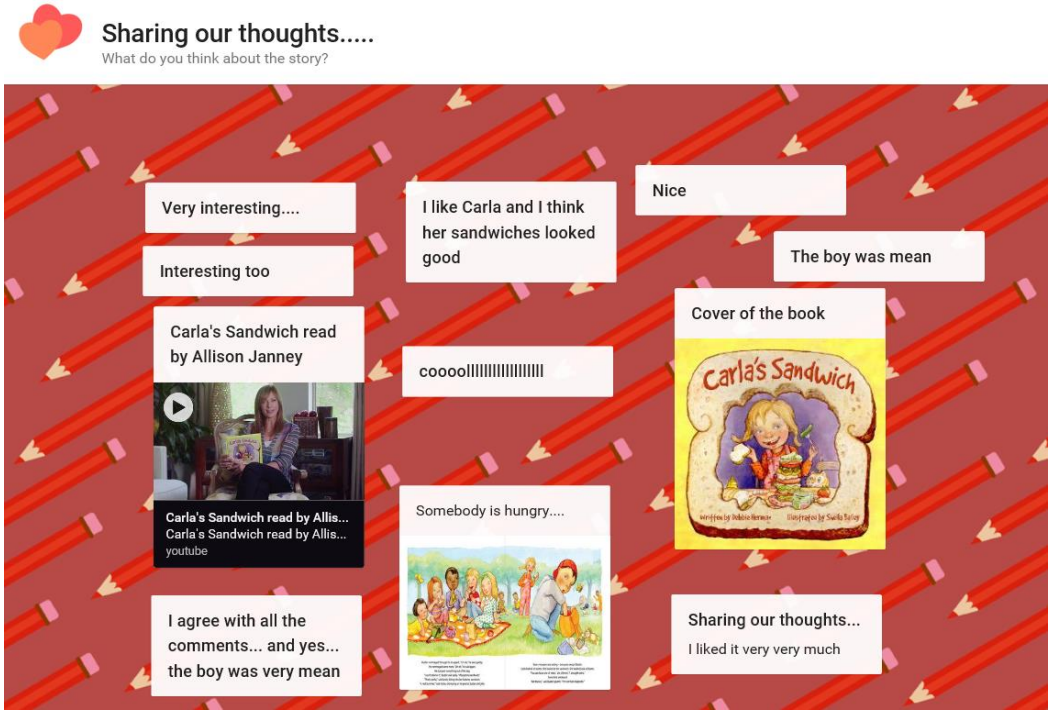

Figure 7.3: Reading and writing activity through Padlet

Episodes such as this show that students were engaged in an activity through which they had to read the questions presented by the teacher, write or type their comments and answer and read the statements of others. The digital technology enabled students to make the most of their reading and writing skills together in order to successfully carry out such activities.

Therefore it can be argued that reading and writing are even more complex than the students' definitions suggested. My research showed that children moved fluidly between page and screen and that the participants defined 'reading' and 'writing' as two separate terms, unique and different from each other. Figure 7.4 shows a representation of how reading, writing and digital technology have been defined by the participants throughout this study. As the figure shows, reading, writing and digital technology were defined individually and distinct from each other.

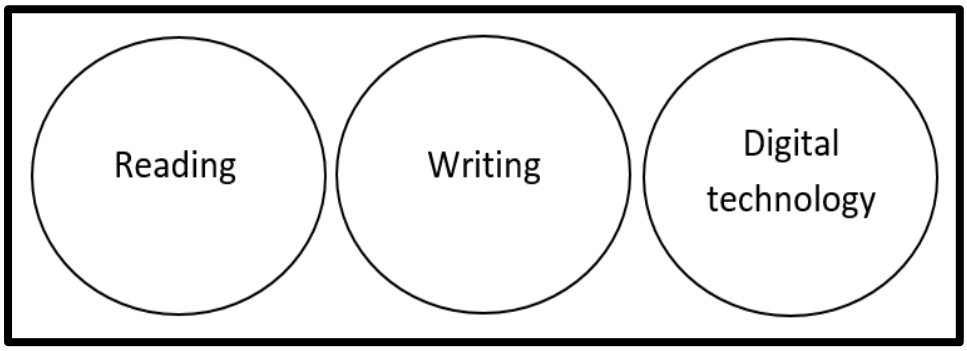

Figure 7.4: ***Defining reading, writing and technology as three seperate terms***

The observations and the interviews conducted throughout this study have presented a different picture. Students and educators used digital technology on a daily basis and this study was designed to get a step closer in understanding what reading and writing have become as we go further into a digital age. Additionally, this study has revealed that reading, writing and digital technology were observed to be so closely intertwined together. Figure 7.5 below presents a visual diagram of this 'theory'.

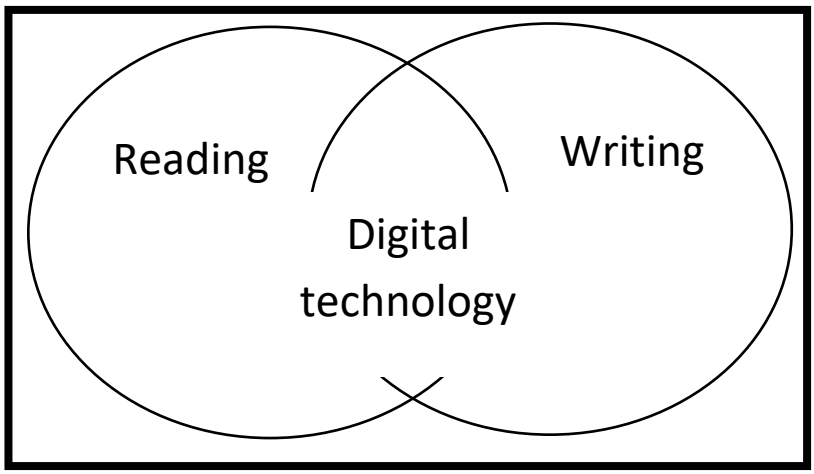

Figure 7.5: ***Defining reading, writing and digital technology as a united term***

It can be argued that the Learning Outcomes Framework (2016) document seems to recognize, even to a small extent that reading and writing are becoming more of a combined skill within the context of digital technology. However, the assessment of the curriculum is still heavily situated in a discourse that sees reading and writing as being separate skills that are largely confined to a paper-based context.

The multimedia function used by learners today encourages students to read and write through tapping, scrolling and swiping methods and reading and writing are being taught all the time through these means (Shanis and Hedge, 2003). In my observations, I was aware that the physical actions of tapping, scrolling and swiping, amongst others, were used in both 'reading' and 'writing'. This is why this chapter is arguing that 'reading' and 'writing' are perhaps becoming more intertwined as we progress further into the digital age.

From the data collected it shows that constructions of reading and writing are changing and there seems to be an urgent need to revise the definition of 'reading' and 'writing' in the digital age. We are moving into an era through which digital technology is being used on a daily basis in Maltese classrooms and there is a strong need to explore how students are responding to such advancements. However the education system is faced with the contradiction of having students moving towards greater interaction with digital texts, but they are still being assessed through tests that occur within the context of print-based materials. This

concern was also explored by Walsh (2010) who observed that curriculum policies need to address the contradiction between students working with digital and multimodal forms of texts while being assessed through print-based resources.

It can be argued that being simply aware of the relationship explored in Figure 7.5 is not enough to facilitate change and progress within the educational system. As many have argued, including Burnett and Merchant (2015), traditional literacy skill continues to be privileged in the education system. Yet this present study has shown that digital technology is not only embedded in children's reading and writing today, but is having a profound impact on HOW children conceptualise, decode, understand and produce text. This suggests an urgent need for the education system, from the point of policy onwards, to acknowledge these important changes in how children are reading and writing and ensure that the curriculum and its assessment reflect this.

Furthermore the move to a post-print world brought about by ICT and the new definitions of literacy emerging should be seen as a welcome event – 'an acknowledgement that society and, therefore, education are dynamic. Redefining literacy is one part of the recognition we have that learning to 'access the world... and knowledge' is critical to our present and future society' (Gamble and Easingwood 2000, p.17).

It must be stated however that new definitions of literacy might not be seen as a welcome event and this might not be a straight forward and easy task to accomplish. This is mainly because 'children's lives in a digital age is a complex task, and considering the implications for primary education is fraught with tension' (Burnett, 2016, p.3). In her report Burnett (2016) explicidly explains why this is the case:

> On one hand there are calls to recognise the sophistication of children's everyday uses of digital media and for much greater integration of technology in education to equip children effectively for their current and future lives. On the other hand there are anxieties about the implications of extensive screen-time and about what or whom children may encounter in digital environments that are hard to police and difficult to confine (p.3).

This might also be difficult for teachers who are resistant to change, especially those who define reading and writing in its narrowest of forms (Draper, 2010). However this should not prevent a serious attempt to encourage teachers, policy makers and parents to acknowledge the increasing mis-match between how children read and write today and how they are assessed in schools.

In sum, data analysis has suggested that we might need a new term to describe reading and writing in the digital age. The literature outlined in the Literature Review suggested 'digital literacy' as a term to describe reading and writing through digital technologies. Given that this is a term that has been used widely in the literature, my findings have extended this concept and showed that reading and writing within the context of digital technology are becoming increasingly connected, and this needs to be acknowledged within the definition of 'digital literacy'. It is evident from this study that reading and writing appear to work together within the context of digital technology in a way that has not previously been observed in relation to the use of paper text. In conclusion this chapter has explored the specific notion of reading and writing and their interrelationship with digital technology. The final chapter shall draw upon these findings and presents a summary and conclusions.

CHAPTER 8

Summary and Conclusions

8.1 Introduction

This research study has sought to answer two main research questions. The first question asked what reading and writing in the digital age are and how students and teachers define reading and writing in the 21st Century. The second research question explored teachers' and students' views on the role of technology in reading and writing in the classroom. These questions have been answered by conducting research within the context of a primary school setting and the previous chapters gave a detailed presentation of the findings which provided answers to these questions.

The first part of this chapter summarises the main findings in relation to the students' and teachers' definitions of reading and writing and shows how reading and writing were observed to be 'blended' and 'mixed together' through classroom observations. This chapter further summarises what reading and writing actually are in the digital age and explores the implications of the findings for practice and policy within the Maltese context. Finally, this chapter is concluded by presenting a number of limitations encountered and some recommendations for further studies.

8.2 What is reading and writing in the digital age? Exploring new definitions and implications for practice and policy

This study contributed towards an understanding of what 21st Century reading and writing are. Data from this research has showed that when the students and teachers were asked to provide a definition for reading and writing, they all provided similar definitions and the students' definitions reflected those presented by their teachers. Data from this study also revealed that the definitions outlined by the students as well as the teachers were influenced by traditional constructions of reading and writing.

Most students associated writing with a paper-based activity through which a person can communicate or share a written message whilst reading was commonly defined as an activity through which an individual looks at words, spells and reads them out. The teachers defined reading as an activity where the reader is able to

make meaning from print through the blending of letter sounds. Writing was described as a method which represents language in visual form. It can be argued that the definitions presented by the students and the teachers reflected some of those presented in the Literature Review which suggested that this is indeed the case for many students and teachers.

In order to explore in more depth how reading and writing are being defined, observations were conducted within the classroom context. This enabled me as a researcher to compare and contrast what the students and teachers reported and understood by the terms 'reading' and 'writing' and how these were being practised within the classroom context. Data from the observations showed that what the students and teachers understood by the terms 'reading' and 'writing' differed from what was being observed in relation to the use of digital technology. Therefore, the data revealed a disparity between the definitions expressed verbally by the participants and what was observed within the classroom setting. The observations showed that whenever students were making use of digital technological devices, reading and writing were being observed in multimodal ways. Furthermore, data showed how these 21st Century learners were making use of new skills and that definitions of 'reading' and 'writing' were much more complex than those proposed by the students and teachers.

The findings reported in Chapter 5 and 6 revealed that the teachers regarded work on paper as more important than work on screen. Some of the children in this study also seemed to agree with this. This notion was reflected in the teachers' discourse which was also noted to be different when they gave instructions to students to work on screen and on paper. In addition, research activities also showed that the school discourse dominated constructions of reading and writing.

However my study has gone a long way in developing an understanding of what reading and writing actually are now. There is not much literature on this, so this research is a very important contribution to the field of literacy, especially in the Maltese context. Reading and writing were observed to be complex and data from this study has indicated that the very essence of reading and writing has changed.

Data showed how the children in this study collaborated freely when engaged in reading and writing activities. It was evident from the very start of this research that digital technologies such as the tablets, Nintendo DS and Easi-Speak promoted collaborative and interactive reading and writing even at times when the students were given directions to work on their own. Chapter 5 and 6 showed how students worked on their own when they were given a printed text to read or a handout to write on. On the contrary, data from this study showed that digital technologies not only encouraged the students to collaborate amongst themselves but also promoted and motivated the students to make use of other skills such as listening and speaking.

Data from this study further revealed that this type of collaboration was accepted by students and their teachers. It was interesting to find through this study that students were observed using each other's tablets or computers at various times and that the teacher accepted such collaboration. This study also showed how teachers valued 'working in silence' when students were reading and writing on paper-based resources. This research study has therefore uncovered a real tension. Teachers did not mind the collaboration when students worked on screen because they did not see it as 'real' work – this was confined to paper texts. Data analysis showed that this did not sit comfortably with the way Maltese schools generally teach. In fact, in Grade 3.1, Ms.Debono was observed to continuously ask the students to work quietly on their own and their use of digital technology was used in a limited manner.

Therefore, this study revealed that reading and writing within a digital context is indeed interactive and collaborative but my study also found that this did not sit comfortably with teachers' definitions of what it means to read and write successfully in school. This does not only mean that teachers should give students more time to collaborate but teachers clearly need to be supported in understanding what 21st Century reading and writing actually is. It is only when Maltese teachers acknowledge this that they can then capitalise on this in the classroom.

It can be further argued however that providing support to teachers or encouraging them to see what reading and writing is becoming is not an easy task. It was noted

that the teachers within this Maltese context are working within a curriculum that is situated within a different discourse and therefore it would not be easy to support teachers. It can be also argued that change needs to be made at the level of policy. Policy makers need to acknowledge how reading and writing are changing in the digital age and need to promote a level of teaching which best suits 'digital' readers and writers.

The findings from this study revealed that not only were children collaborating freely when reading and writing on screen, but they were also engaging with text on a very physical level. In particular students were seen to be using touch to make use of technological devices and produce text. Students were making constant use of 'touch-based learning' through which the use of touch influenced meaning making through physical action. The use of tablets in this study for example fostered the children's constant interaction with the screen through quick finger movement such as sliding, tapping and touching. Conversely, when the students were using paper-based resources, they did not collaborate amongst themselves but rather worked independently from each other. Data also showed that the students were penalised when they were 'caught' writing on each other's copybooks. This again shows that paper texts are given more value and that this Maltese context is constrained by the school discourse which distinguishes between 'real' work and work on screen.

Important findings were also uncovered with regard to the concept of ownership of text, and how this was influenced by a use of digital technology. This study revealed how students felt that they 'owned' their work when they created their own unique texts on digital devices. Other findings also showed that 'ownership' motivated the students to engage themselves more in reading and writing activities. In addition, this study reported that students were 'free' from proficiency judgements about their reading and writing when this was carried on screen. Observations showed how students felt very comfortable sharing their work with other students in class. They were also noted to help each other when a spelling mistake was spotted. Data suggested that this was because work on screen was not being regarded as 'real work'. Conversely, the students were not always

comfortable when their work was uploaded on the Internet since this meant that their work became ‘formal’.

This study has further revealed that the participants distinguished between two forms of reading and writing; ‘formal’ reading and writing and ‘informal’ reading and writing. This again shows how the school discourse focused on paper texts. It was interesting to note that it was one of the teachers, Ms.Debono who came up with these terms. The notion of formal and informal reading and writing was also referred to by the students and Ms.Vella throughout the course of the data collection. Table 8.1 summarises what the participants understood by each term.

‘Formal’ reading and writing	A school based activity carried out on a copybook or handout. The teacher corrected spelling mistakes by using a red pen whilst for intonation the teacher asked the students to repeat the misspelt word after her. School work and homework were both regarded as ‘formal’ ways to read and write.
‘Informal’ reading and writing	An activity which is likely to occur outside of the school setting and is highly related to leisure purposes. Amongst the examples given the following were mentioned: texting a friend, looking up information about a favourite singer and using photos and images to represent text. These activities are not corrected and abbreviations and spelling mistakes are allowed.

Table 8.1: ***‘Formal’ and ‘informal’ reading and writing***

As Table 8.1 shows ‘formal’ reading and writing are more traditionally oriented and related to paper-based resources and schooling whilst ‘informal’ reading and writing are more connected to digital technologies. Table 8.1 illustrates how these Maltese teachers distinguished between work on paper and work on screen and that

the former type of work was given more importance in this context. This study has revealed that due to advancements in the use of digital technologies informal ways of reading and writing are more commonly used by students and their teachers.

However this is creating a tension for teachers as highlighted by the data reported by one of the teachers. Ms.Debono expressed her concern that students are now struggling more to read and write correctly due to new ways of reading and writing which seem to have taken over 'formal' ways of reading and writing. The teachers in this study also reported that students now need to learn to 'switch' between different forms of writing. Dowdall (2006) refers to the term 'easy switcher' to describe a child who has 'an ability to respond as a different sort of text producer according to the demands of the context' (p.153) whilst the teachers in this study have reported that their students were not 'easy switchers' and were at times struggling to write in a good grammatical manner.

This research has also shown that even adults are facing this struggle with Ms.Debono explaining that she has applied for a course in order to revise spelling in Maltese. This is clearly showing that it will be a struggle for teachers to simply accept changing definitions of reading and writing because, as my study has shown, teachers may well feel as if reading and writing on screen is not 'real' work. This suggests that my study is really just the beginning and there is a need to understand more about how children are reading and writing today and what this means for the curriculum.

Although the teachers expressed their concern that students are now struggling to read and write correctly due to technological advancements, further data analysis has revealed how digital technologies contributed towards 'fluidity' – a concept which has not been discussed in the literature. Data from this study showed how writing on digital technologies helped learners produce polished text production because it gave the students the opportunity to change or edit their written work if required. This implies that educators need to be aware of the benefits of digital technology use in reading and writing and acknowledge positive attributes such as 'fluidity' and the use of spell checks because these form part of what constitutes as writing in the digital age.

Writing with digital technologies, like reading, is now moving towards a finished product which might contain various layouts, graphics, images and even photographs and which is normally designed for an audience (Walsh, 2010). Before starting to type, students in this study needed to understand features of design such as the use of text and images and presentation of layout. Students were also seen to consider how these suit different audiences. Through such methods the students were active participants in their own writing process and were developing what Carrington (2005) refers to as 'literate habitus' around new technologies which in turn is making them more active.

Therefore writing on screen was observed to be moving more towards 'designing' and this has changed the way writers make meaning. This was also explored by O'Mara and Laidlaw (2011) who have described today's learners as 'creators', 'designers' and 'experts'. Young writers in the 21st Century perceive themselves as 'producers' and today's students are entering our classrooms knowing that they are 'directors' of information whilst moving away from traditional systems which perceive students as 'receivers' of knowledge (O'Mara and Laidlaw, 2011). This was also observed during various occasions in Grade 3.2.

It can be argued that features of design on the basis of my findings, were embedded in the writing process – so 'writing' in the digital age is not just about the print but about the whole design of a piece of text. In other words, writing in the digital age is no longer about just holding a pen or pencil. Although writing includes elements of this, this research study has shown that writing involves elements of design and Maltese educators and policy makers need to recognise this as being of value rather than relate it to *"laziness".*

The teacher participants in this study expressed their perception that they believed that readers and writers in the 21st Century are becoming more 'lazy'. In addition to this, this study has showed that writing is in fact becoming increasingly complex. Yet, conversely, my data also showed that teachers and some of the students perceived writing on screen as being 'lazy'. This again highlights a huge discrepancy between school construction and what children are now actually doing when they read and write.

It can be argued that although the literature seems to portray different findings, within this Maltese context the teachers perceived on screen work as being *"lazy".* This view on the use of technological devices prevented the teachers from encouraging their students to benefit from the affordances of digital technology. This once again suggests that teachers may have a narrow definition of reading and writing and within this definition they see technology as promoting *"laziness".* This confirms that the teachers in this study were not understanding the complexity of what reading and writing have actually become.

In addition to the findings summarised in this chapter, data from this study revealed that whenever digital technological devices were used, reading, writing and technology were amalgamated and 'blended' together to the extent that students could not particularly specify whether they were engaged in a reading and/or writing activity. Data has showed that this amalgamation was more present when digital technological devices were being used and whenever reading and writing were combined with multimodal factors. This was highly evident during the classroom observations and data from this study revealed that the students were aware of this relationship between reading and writing even though they had previously regarded reading and writing as two separate skills linked with paper-based resources.

The findings derived from this research therefore suggest the need to revisit and adapt the definitions for reading and writing as this study revealed that digital technology is blending reading and writing together. On the contrary however, whenever reading and writing were carried out in a traditional manner the students separated the activities and could identify between reading and writing tasks more easily.

My observations have revealed that the reading and writing students were doing was vastly more complex than their definitions suggest and data analysis has showed that policy makers and parents tend to share these definitions. Furthermore, although the Maltese educational system is encouraging the use of digital technologies in the classroom, defining 'reading' and 'writing' is still traditionally constructed. This study has showed that students are being exposed

to new forms of literacy due to their experiences with digital technologies and it is only if teachers are aware of this change that they can fully be prepared to teach students in the 'digital age'.

In relation to this, the literature presented in the Literature Review showed how definitions of reading and writing are changing. The Literature Review further elaborated on literacy and showed that this term is a dynamic concept that has changed over the years. My study has also showed that literacy is changing radically in the light of digital technology. However, this is problematic as these constructions are not acknowledged within the school discourse. The notion that reading and writing may become increasingly more connected is a particularly important point as the skills of reading and writing are viewed as very separate from each other within the curriculum and its assessment. This raises questions about the future direction of teaching children to read and write.

It can be argued that the Maltese system is wanting to encourage the use of technology in the classroom. However, my study is showing that the school discourse within this Maltese context is inhibiting this because reading and writing on screen are not valued. Reading and writing on screen were not seen as being 'educational' and therefore it is not being used within the everyday curriculum.

In conclusion, it is imperative for Maltese educators and the Maltese education system to be aware of how reading and writing have changed and is still changing in the 21st Century. It is only when this occurs that all stakeholders can move forward and ensure that the Maltese curriculum and teaching of reading and writing is successful. Furthermore this study has demonstrated that although students defined reading in a traditional way, reading and writing in the 21st Century is about 'access to ideas that challenge our thinking and which promote new ways of looking at our world' (Gamble and Easingwood, 2000, p.4).

8.3 Limitations encountered

Although this research has achieved its aims, there were some limitations. A number of limitations encountered in this study were evident at the start of the research whilst others became apparent as the study progressed. The general

limitations encountered were of two types; methodological limitations and limitations of the researcher. Those directly linked to the type of research strategy and approach chosen were elaborated in more detail in Chapter 3.

This research was conducted with a small number of students and teachers. Therefore in order to generalise the results for larger groups, the study would need to have involved more participants. It must also be recognised however that while the findings from this study have been highly revealing, they are in many ways just 'a beginning'. There is a need for more research with larger samples to further understanding of how children are reading and writing today. This research has been carried out within a time frame of a whole scholastic year, and this allowed an in-depth understanding of how these children are reading and writing in the digital age. Yet there is a need for further research with a greater number of participants, in order to develop these concepts further and gain an even deeper understanding of how children of different ages, and indeed adults, are reading and writing within the context of digital technology.

Furthermore, this study was conducted within the Maltese context, meaning that findings may not be transferable to other context. Having said this, it is imperative to note that this study has dealt with a much underexplored topic and could only be understood through careful longitudinal data collection. In order to gain in-depth understandings, I had to work with a relatively small sample. Nevertheless, this sample has provided new insights into the ways in which these students were reading and writing – as a consequence it can be assumed that this data will be applicable to others. In sum, while it is not possible to generalise from such a small sample, the depth of understanding has been substantial.

Some may argue that carrying out research in one's own workplace is a limitation, however given the purposes of this study I consider this to have been more of an advantage. In fact being able to carry out the observations and one of the interviews at school certainly minimised a number of potential difficulties. I believe that interviewing and conducting observations at my work place served as an advantage. The practitioners seemed eager to participate since the interviews were

conducted at a time and place which was chosen by the teachers. At times however carrying out the interviews at school was still difficult since opportunities for data collection varied, but thanks to the help of the teachers, I was supported in all stages of the research process which served as a great advantage to the study.

Discovering limitations can serve as an important way to identify new gaps in the literature and therefore propose the need for further research. The section which follows took the limitations described into consideration and linked these to recommendations for further research.

8.4 Recommendations for further study

Whilst taking the findings from this research into consideration, in this section I shall propose a number of recommendations for future research. The main aim behind this research study was to explore what reading and writing are in the digital age. The data were collected from the classroom setting and it revealed that students are now constantly reading and writing through digital resources. It would be interesting to explore the definitions for 'reading' and 'writing' even further by researching 'literacy at home', whether digital technologies are being used in the same manner and for which purposes. The study reported in this thesis for example showed that students, mostly boys, were exposed to various gaming devices at home.

This study has been highly revealing but there is a need for more similar research to build further on what I have found. This study was focused on the school context within a rather 'formal' education system – yet even in this environment this study found that children's use of digital technology is radically changing the way that children read and write. Given these findings it would be highly valuable to conduct similar research in children's homes where it is expected that even more use is made of digital technology. In addition, this study has revealed findings that are specific to the Maltese context, yet the nature of the findings strongly suggest that they are applicable to other contexts. This suggests a need to conduct similar research in different cultural contexts.

In addition to this Chapter 7 has shown how digital technology is bringing reading and writing closer together and this is a new area of understanding because it appears to be the direction in which we are heading. This however is just the beginning and there is need for more work on this particular aspect of reading and writing in the digital age.

Furthermore, data analysis has revealed that students are being exposed to 'formal' and 'informal' ways of reading and writing. Data showed how students and teachers sometimes struggled to distinguish between the two and digital technology is making it easier for them to write in an informal manner, with an increased number of spelling mistakes. More detailed research on this would add an original contribution to knowledge since it builds upon a reality which students are now facing.

Additionally, this study has revealed that students read and write in various ways. Audio-reading was a common theme which emerged through data analysis. The students in this study were sceptical as to whether audio-reading can be considered as 'real' reading or not whilst the teachers explained that they did not use audio-books because they *"do all the work for students"*. The literature which was outlined in Chapter 5 showed that audio-reading has its benefits even though it was not liked by teachers. Further research about audio-reading and its implications on practice would be beneficial since there is lack of research on the topic. Through such an understanding educators can teach students in a way which is more meaningful and which relates to their exposure to reading and writing.

In sum, this study further revealed a disparity between how children are reading and writing in the digital age and what teachers believe to be 'correct' and valuable. What is needed is firstly more research on how children are reading and writing, but then there is also a need for research with teachers and perhaps even policy makers to see what will be needed in order to actually instil change.

8.5 Recommendations for policy and practice

This section shall now outline recommendations for policy and practice in relation to continuing professional development for teachers within the Maltese context.

The first step would be to take account of what we know about the relationship between policy, practice, pedagogy and literacy in Maltese classrooms. This study has showed that the Learning Outcomes Framework (2015) is the most recent policy document which was published and the first to acknowledge the use of digital technology in the definitions of reading and writing. The data analysis further showed that in spite of this the teachers and the students in this study did not even acknowledge this in their definitions. Classroom observations have confirmed a disparity between the participants' definitions and what was actually being observed in class.

The way forward is therefore to make practitioners aware of the way constructions of what it means to be a reader and writer have changed in the digital age. This can be initially carried out on a school level. Each school in Malta is expected to carry out a number of professional development sessions after school hours. It would be ideal if one of these sessions is dedicated towards establishing a school definition for reading and writing and acknowledging how literacy is changing. This can be outlined in the school development plan of each school. It can be further extended towards a college level and then towards a national level.

In-service sessions in Malta are normally distributed across the year, but tend to amount to three days; during these days teachers are encouraged to extend their teaching knowledge in order to facilitate change or improve their teaching. This study strongly suggests that these findings need to be disseminated to teachers as a matter of urgency. In-service sessions are the ideal opportunity to present salient findings from this study, so teachers can see how children are in fact reading and writing today. This will have obvious implications for the Learning Outcomes Framework which will need to more closely match these findings.

8.6 Conclusion

In conclusion this thesis set out to answer two research questions and findings have shown that the participants interviewed provided a traditional definition for reading and writing even though reading and writing were observed to mean much more than simply reading and writing text. Digital technologies have promoted a wider

definition to those provided by the students and their teachers in this study. It can be argued that it is only when Maltese educators acknowledge the broader meaning of reading and writing in the digital age that they can successfully teach 'digital students'.

The publication of the Learning Outcomes Framework (2016) acknowledges how reading and writing are changing due to digital technologies however it needs to be ensured that teachers understand new implications of reading and writing. Given that 'one cannot build a house with a weak foundation' - the same can be argued about the Maltese education system. The Learning Outcomes Framework (2016) takes the use of digital technologies in Maltese classrooms into consideration. However the use of digital technologies can only be successful if they are driven by a teacher who fully understands their potential and who understands how reading and writing are changing to include more than just traditional notions of decoding and making meaning. It can be argued that it would be futile for Maltese classrooms to be equipped with the latest digital technologies if their affordances were not fully realised. All stakeholders, and this includes parents, teachers and students, need to understand how reading and writing have changed and how to make the best use of digital technology for meaningful learning.

Education is a dynamic process and it has to respond to changes in our society. Hence, constant changes and initiatives are inevitable to render our education system relevant to today's world. Within the coming weeks, months and years further changes will continue to shape our educational system. Together we have to be smart enough to understand how to mould the curricula so that our pupils will participate effectively in tomorrow's world. We must all seek to understand what reading and writing have become – here in Malta and beyond – so we can support all of our children in reaching their full potential as they grow up in the 21st Century.

REFERENCES

References

Adam, N., & Wild, M. (1997). Applying CD-ROM interactive storybooks to learning to read. *Journal of Computer Assisted Learning, 13,* 119-132.

Adams, D. (2007). The digital device. *American School Board Journal, 194*(7), 22-23.

Ahmed, M. (2011). Defining and measuring literacy: Facing the reality. *International Review of Education, 57,* 179-195.

Ahmed, P. (2012). The way we teach, the way they learn. *Procedia – Social and Behavioral Sciences, 47,* 1554-1557.

Anderson, K.T. (2013). Contrasting systemic functional linguistic and situated literacies approaches to multimodality in literacy and writing studies. *Written Communication, 30*(3), 276-299.

Armstrong, V., Barnes, S., Sutherland, R., Curran, S., Mills, S., & Thompson, I. (2005). Collaborative research methodologies for investigating teaching and learning: The use of interactive whiteboard technology. *Educational Review, 57*(4), 457-469.

Bailey, K. D. (1978). *Methods of Social Research.* Basingstoke: Collier-Macmillan.

Barone, D., & Wright, T. E. (2009). Literacy instruction with digital and media technologies. *The Reading Teacher, 62*(4), 292-302.

Bartlett L. (2008). Literacy's verb: Exploring what literacy is and does. *International Journal of Educational Development, 28*(6), 737-753.

Bartolo, E. (2014). Minister's Foreword. In Ministry for Education and Employment, *A National Literacy Strategy For All in Malta and Gozo 2014-2019* (p.6). Malta: Salesian Press.

Bartolo, E. (2014, July 8). Technology 'must be integrated' in educational system. *Malta Today.* Retrieved from: http://www.maltatoday.com.mt/printversion/40945/

Bartolo, E. (2014, October 1). The proof of the tablet is in the reading (and writing). *Malta Today.* Retrieved from: http://www.maltatoday.com.mt/printversion/44330

Barton, D., & Hamilton, M. (1998). *Local literacies: Reading and writing in one community.* London: Routledge.

Bassey, M. (1999). *Case study research in educational settings.* Buckingham and Philadelphia: Open University Press.

Baya'a, N., & Daher, W. (2009). Learning mathematics in an authentic mobile environment: The perceptions of students. *International Journal of Interactive Mobile Technologies, 3,* 6-14.

Bergen, D. (2000). Technology in the classroom. *Childhood Education 76*(2), 116-118.

Betcher, C., & Lee, M. (2011). *The interactive whiteboard resolution: Teaching with IWBs.* Australia: ACER Press.

Birkerts, S. (1995). *The Gutenberg elegies: The fate of reading in an electronic age*. New York: Fawcett Columbine.

Biro, P. (2011). Students and the interactive whiteboard. *Acta Didactica Napocensia, 4*(2-3), 29-38.

Bland, D. (2012). Analysing children's drawing: Applied imagination, *International Journal of Research and Method in Education, 35*(3), 235-242.

Bourdieu, P. (1991). *Language and Symbolic Power*. Trans. Raymond, G & Adamson, M., Cambridge, U.K.: Harvard University Press.

Boyd, B. (1997). Teacher response to superhero play: To ban or not to ban? *Childhood Education, 74*(1), 23-28.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101.

British Educational Communications and Technology Agency (BECTA), (2007), *Evaluation of the primary schools whiteboard expansion project, Centre of ICT, Pedagogy and Learning. Education and Social Research Institute, Manchester Metropolitan University,* Retrieved, May, 20, 2012 from http://www.becta.org.uk

Brody, J. E. (2015, July 6). Screen addiction is taking a toll on children. *The New York Times*. Retrieved from: http://well.blogs.nytimes.com/2015/07/06/screen-addiction-is-taking-a-toll-on-children/?_r=0

Bryman, A. (2001). *Social research methods.* Oxford: Oxford University Press.

Burden, K. (2002). *Learning from the bottom up: the contribution of school based practice and research in the effective use of interactive whiteboard for the FE/HE sector. Presentation at Learning and Skills Research – Making an Impact Regionally Conference, The Earth Centre, Doncaster.* Retrieved

March 13, 2013, from:
http://www.prometheanworld.com/staged/upload/pdf/learning_bottom_up.pdf

Burnett, C. and Merchant, G. (2015). The challenge of 21st- Century Literacies. *Journal of Adolescent and Adult Literacy 59(3),* 271-274

Burnett, C. (2016). *The digital age and its implications for learning and teaching in the primary school. A report for the Cambridge Primary Review Trust.* York: British Library Catoguing in Publication Data.

Carabott, S, (2015, August 4). Teachers seeking control over students' tablet use. *Times of Malta*. Retrieved from:
http://www.timesofmalta.com/articles/view/20150804/local/teachers-seeking-control-over-students-tablet-use.579230

Carrington, V. (2005). New textual landscapes, information and early literacy. In J. Marsh, (Ed.), *Popular Culture, New Media and Digital Literacy in Early Childhood.* London: Routledge Falmer.

Castells, M. (Ed.) (2004). *The network society: a cross-cultural perspective.* Chelttenham, UK: Edward Elgar.

Chai, C. S., & Lim, C. P. (2011). The internet and teacher education: Traversing between the digitized world and schools. *Internet and Higher Education, 14,* 3-9.

Chapman, J. W., & Tunmer, W. E. (1997). A longitudinal study of beginning reading achievement and reading self-concept. *British Journal of Educational Psychology, 67,* 279-291.

Charney, D. (1994). The effect of hypertext on processes of reading and writing. In C. L. Selfe, & S. Hiligoss, (Eds.), *Literacy and computers: The complications of teaching and learning with technology* (pp. 238-263). New York: Modern Language Association.

Churchill, D., & Churchill, N. (2008). Educational affordances of PDAs: A study of a teacher's exploration of this technology. *Computers & Education, 50,* 1439-1450.

Clough, P. & Nutbrown, C. (2008). *A student's guide to methodology 2nd edition*. England: SAGE.

Clough, P. & Nutbrown, C. (2012). *A student's guide to methodology 3rd edition*. England: SAGE.

Cody, M., Dunn, D., Hoppin, S., & Wendt, P. (2009). Silver surfers: Training and evaluating Internet use among older adult learners. *Communication Education, 48*(4), 269-286.

Cogill, J. (2010). A model of pedagogical change for the evaluation of interactive whiteboard practice. In M. Thomas & E. Cutrim Schmid, *Interactive whiteboards for education: Theory, research and practice* (pp. 162-178). USA: IGI Global.

Cohen, L., Manion, L., & Morrison, K. (2010). *Research methods in education, 6th edition*, USA and Canada: British Library Cataloguing in Publication Data.

Collins, J., & Blot, R. K. (2003). *Literacy and literacies: Texts, power and identity*. United Kingdom: University Press, Cambridge.

Cook-Gumperz, J. (Ed.) (2006). *The Social Construction of Literacy, (2nd ed.). International Studies in Cultural Linguistics, Vol. 25.* Cambridge: Cambridge University Press.

Cordes, C., & Miller, E. (2000). *Fool's gold: A critical look at computers in childhood.* College Park, MD: Alliance for Childhood.

Creswell, J. W., & Plano Clark, V. (2007). *Designing and conducting mixed methods research.* Thousand Oaks, CA: Sage.

Cutrim Schmid, E. (2008). Potential pedagogical benefits and drawbacks of multimedia use in the English language classroom equipped with interactive whiteboard technology. *Computers & Education, 51*(4), 1553-1568.

Denscombe, M. (2010). *The Good Research Guide for small-scale social research project.* New York: Open University Press.

Department of eLearning. (2015). *Research report on the pilot study of the one tablet per child project in Malta.* Malta: Directorate for Quality and Standards in Education, Ministry for Education and Employment.

DeStefano, D., & LeFevre, J. A. (2007). Cognitive load in hypertext reading: A review. *Computers in Human Behaviour, 23*(3), 1616-1641.

Directorate for Quality and Standards in Education. (2009). *National policy and strategy for the attainment of core competences in primary education*. Malta: Ministry for Education, Culture, Youth and Sport.

Directorate for Quality and Standards in Education. (2013). *Progress in international reading literacy study. Malta Report 2011.* Malta: Ministry for Education, Culture, Youth and Sport.

Directorate for Quality and Standards in Education. (2015). *Learning Outcomes Framework.* Malta: Ministry for Education, Culture, Youth and Sport.

Dowdall, C. (2006). Ben and his army scenes: A considerstion of on child's out of school text production. *English in Education, 40*, 39-54.

Dowdall, C. (2006). Dissonance between the digitally created words of school and home. *Literacy, 40*, 153-163.

Dowdall, C. (2009). Impressions, improvisations and compositions: Reframing children's text production in social network sites. *Literacy*, *43*, 91-99.

Draper, S. W., & Brown, M. I. (2004). *Use of the PRS (Personal Response System) handsets at Glasgow University*. Retrieved May 24, 2006, from: http://www.psy.gla.ac.uk/~steve/ilig/interim.htlm

Draper, R.J. (Ed.). (2010). (*Re)imagining content-area literacy instruction.* New York, NY: Teachers College Press.

Edwards, S., & Bruce, C. (2000). Reflective Internet searching, an action research model. In O. Zuber-Skerrit, (Ed.), *Action learning, action research and process management: Theory, practice, praxis* (pp. 1-27). Australia: Griffith University.

Eshet-Alkalai, Y. (2004). Digital literacy: A conceptual framework for survival in the digital era. *Journal of Multimedia and Hypermedia, 13*(1), 93-106.

Evans, J. (Ed). (2004). *Literacy moves on: Using popular culture, new technologies and critical literacy in the primary classroom.* London, England: David Fulton

Fielding, N.G., & Fielding, J. L. (1986). *Linking Data.* Beverly Hills, CA: Sage.

Fiorentino, L. H. (2004). Digital video assignments: Focusing a new lens on teacher preparation programs. *Journal of Physical Education Recreation and Dance, 75*(5), 47-54.

Freire, P. (1998). *The Paulo Freire reader.* New York: Continuum.

Gajendra, K. V., & Kanka, M. (1999). *Researching Education: Perspectives and Techniques.* UK: Falmer Press.

Gamble, N., & Easingwood, N. (Ed.) (2000). *ICT and literacy.* Great Britain: TJ International Ltd.

Gee, J., P. (2004a). *What videogamers have to teach us about learning and literacy.* New York: Palgrave Macmillan.

Gee, J., P. (2004b). *Situated language and learning: A critique of traditional schooling.* London: Routledge.

Glover, D., & Miller, D. (2001). *Missioners, Tentatives and Luddites: Leadership challenges for school and classroom posed by the introduction of interactive whiteboards into schools in the United Kingdom. Part of the Symposium: New Technologies and Educational Leadership at the British Educational Management and Administration Society Conference, Newport Pagnell, UK.* Retrieved November 18, 2013 from: http://www.keele.ac.uk/depts/ed/iaw/Missioners.pdf

Glover, D., & Miller, D. (2001). Running with technology: The pedagogic impact of the large scale introduction of interactive whiteboards in one secondary school. *Technology, Pedagogy and Education, 10*(3), 257-278.

Goldberg, A., Russell, M., & Cook, A. (2003). The effect of computers on student writing: A meta-analysis of studies from 1992 to 2002. *Journal of Technology, Learning and Assessment, 2*(1), 1-52.

Gray, G., Hagger-Vaughan, L., Pilkington, R., & Tomkins, S. (2007). Integrating ICT into classroom practice in modern foreign language teaching in England: Making room for teachers' voices. *European Journal of Teacher Education, 30*(4), 407-429.

Greene, A. (2015, April 10). Overplugged: By killing boredom you would be killing creativity [Web log post]. Retrieved from http://www.drgreene.com/perspectives/overplugged-by-killing-boredom-you-could-be-killing-creativity/

GSMA, (2014). *Children's use of mobile phones: An international comparison 2013*. Japan: GSM Association.

Gutting, G. (Ed.) (2005) *The Cambridge companion to Foucault 2nd edition.* New York: Cambridge University Press.

Hall, E. T., & Hall, M. R. (2010). The sounds of silence. In L. Cargan, & J. H. Ballantine, (Eds.), *Sociological footprints* (pp. 126-132). Belmont, CA: Wadsworth Cengage Learning.

Hall, I. and Higgins, S. (2005). Primary school students' perceptions of interactive whiteboards. *Journal of Computer Assisted Learning, 21*(2), 102-117.

Hammersley, M. & Atkinson, P. (2001). *Ethnography Second Edition.* London, New York: Taylor and Francis Group.

Hannon, P. (2000). *Reflecting on Literacy in Education.* London: RoutledgeFalmer.

Harel-Caperton, I. (2003). *Clickerati kids: Who are they?* Retrieved March, 2, 2014 from: http://www.mamamedia.com/areas/grownups/new/21_learning/main.html

Harris, C. (2008). An iPhone for every student. *School Library Journal, 54*(11), 22.

Herold, B. (2014). Screen reading poses learning challenges. *Education Week 1,* 24-25.

Higgins. S, (2010). The impact of interactive whiteboards on classroom interaction and learning in primary schools in the UK. In M. Thomas & E. Cutrim Schmid, *Interactive whiteboards for education* (pp. 86-101). USA: IGI Global.

Holloway, S. L., & Valentine, G. (2003). *Cyberkids: Children in the information age*. London: Routledge.

Irwin, W. (2009). Reading Audio Books. *Philosophy and Literature, 33*(2), 358-368.

Jewitt, C. (2002). The move from page to screen: The multimodal reshaping of school English. *Visual Communication, 1*(2), 171-195.

Jones-Kavalier, B. R., & Flannigan, S. L. (2006). Connecting the digital dots: Literacy of the 21st Century. *Educause Quarterly, 29*(2), 8-10.

Kajder, S. (2005). Not quite teaching for real: Preservice secondary English teachers' use of technology in the field following completion of an instructional technology methods course. *Journal of Computers in Teacher Education, 22(*1), 15-33.

Keefe, E., B. & Copeland, S., R. (2012). *A summary of the article 'What is literacy? The power of a definition'.* Retrieved January 25, 2013 from: http://www.pealcenter.org/images/LiteracySummaryArticle.pdf

Kim, S. H., Mims, C., & Holmes, K. (2005). Mobile wireless technology use and implementation: Opening a dialogue on the impact of new technologies in higher education. *Association for the Advancement of Computing in Education Journal, 14*(1), 17-44.

Kolikant, Y.B. (2010). Digital natives, better learners? Students' beliefs about how the Internet influenced their ability to learn. *Computer in Human Behaviour, 26*(6), 1384-1391.

Kress, G. & Jewitt, C., (Eds.) (2003). *Multimodal literacy.* New York: Peter Lang.

Kress, G. (1998). Visual and verbal models of representation on electronically mediated communication: The potentials of new forms of text. In I. Snyder, (Ed.), *Page to screen: Taking literacy into electronic era* (pp.53-79). London: Routledge.

Kress, G. (2003). *Literacy in the new media age*. New York: British Library Cataloguing in Publication Data.

Kvale, S. (Ed.) (2007). *Doing Interviews.* London: SAGE

Lacina, J. (2008). Learning English with iPods. *Childhood Education, 84,* 247-249.

Landow, G. P. (1997). *Hypertext 2.0: The convergence of contemporary critical theory and technology.* Baltimore: Johns Hopkins University Press.

Lankshear, C. & Knobel, M. (2003). *New Literacies Changing Knowledge and Classroom Learning.* Buckingham: Open University Press.

Lee, M & Winzenried, A. (2009). *The use of instructional technology in schools.* Victoria: Australia: Australian Council for Educational Research Ltd.

Lester Harris, T. & Hodges, R.E., (Eds.) (2007). *The literacy dictionary: The vocabulary of reading and writing.* The University of Michigan: International Reading Association.

Levy R., Little, S., Clough, P., Nutbrown, C., Bishop, J., Lamb, T., & Yamada-Rice, D. *Attitudes to reading and writing and their links with social mobility 1914-2014. An evidence review. Final report.* Retrieved May 15, 2014 from: http://www.booktrust.org.uk/usr/library/documents/main/booktrust100-final-report-17-march-2014.pdf

Levy, R. (2008). "Third Spaces" are interesting places; applying "third space theory" to nursery-aged children's constructions of themselves as readers', *Journal of Early Childhood Literacy, 8*(1), 43-66.

Levy, R. (2011). *Young children reading at home and school.* London: SAGE.

Lewis, C., & Fabos, B. (2005). Instant messaging, literacies, and social identities. *Reading Research Quarterly, 40*(54), 470-501.

Lim, J., Pellett, H. H., & Pellett, T. (2009). Integrating digital video technology in the classroom. *Journal of Physical Education, Recreation and Dance, 80*(6), 40-55.

Lim-Fong, B., & Robins, R. (2010). Technology shaping a democratic classroom: The Livingstone case study In M. Thomas & E. Cutrim Schmid, Interactive *Whiteboards for education: Theory, research and practice* (pp.225-237). USA: IGI Global.

Lincoln, Y. S., & Guba, E.G. (1985). *Naturalistic Inquiry: Newbury Park,* CA: SAGE.

Liu, Z. (2005). Reading behaviour in the digital environment. *Journal of Documentation, 61,* 700-712.

Livingstone, S. (2009). *Children and the internet.* United Kingdom: Polity Press.

Mackey, M. (2002). *Literacies across Media: Playing the Text.* London: RoutledgeFalmer.

Mangen, A., Walgermo, B.R. & Bronnick, K. (2013). Reading linear texts on paper versus computer screen: Effects on reading comprehension. *International Journal of Educational Research, 58,* 61-68.

Manzoor, A. (2011). Defining and measuring literacy: Facing the reality. *International Review of Education 57,* 179-195.

Markham, A. N. (2004). Internet communication as a tool for qualitative research. In D. Silverman (Ed.), *Qualitative research, theory, method and practice,* (pp.95-214). London:Sage.

Marsh, J. (2005). Digikids: Young children, popular culture and media. In N. Yelland, *Contemporary Issues in Early Childhood* (pp. 59-79). Buckingham: Open University Press.

Marsh, J. (2008). 'Productive pedagogies: play, creativity and digital cultures in the classroom', in R.Willet, M.Robinson and J.Marsh (Eds.) *Popular*

Culture, New Media and Digital Literacy in Early Childhood. Oxon: RoutledgeFalmer.

Marsh, J. (2010). Young children's play in online virtual worlds. *Journal of Early Childhood Research, 8*(1), 23-39.

Marsh, J. (Ed.) (2005). *Popular culture, new media and digital literacy in early childhood.* London and New York: Routledge.

Martin, L. (2014). A plugged in, turned on, totally engaged Model United Nations. In L. Burke, (Ed.), *Learning in a digitalized age: Plugged in, turned on, totally engaged?* (pp. 17-26). Great Britain: Ashford Colour Press.

McGlashon, A. (2000). Special educational needs and new literacies. In N, Gambe & N. Easingwood, (Ed.), *ICT and literacy. Information and communications technology, media, reading and writing* (pp.89-96). London and New York: Data British Cataloguing-in Publication.

McKnight, K., O'Mailey, K., Ruzic, R., Horsley, M.K., Franey, J.J. & Bassett, K. (2016). Teaching in a digital age: How educators use technology to improve student learning. *JRTE, 48*(3), 194-211.

McLaughlin, C. (2014). Creativity vs technology. *Journal of Media Practice, 14*(1), 1-4.

McNaught, M., Clugston, L., Arthur, L., Beecher, B., Jones Diaz, C., Ashton, J., Hayden, J. & Makin, L. (2001). *The Early Literacy and Social Justice Project: Final Report.* Sydney: NSW Department of Education and Training and NSW Department of Community Services.

McNeely, B. (2005). *Using technology as a learning tool, not just the cool new thing: Educating the net generation.* Washington, DC: Educause.

Merchant, G. (2005). Barbie meets Bob the Builder at the workstation: Learning to write on screen. In J. Marsh, (Ed.), *Popular culture, new media and digital literacy in early childhood* (pp.183-200). London and New York: Routledge.

Merchant, G. (2007). Writing the future in the digital age. *Literacy UKLA, 41*(3), 118-128.

Mertens, D. M. & Ginsberg, P. E. (Eds). (2009). *The handbook of social research ethics.* USA: Sage.

Miall, D. S & Dobson, T. (2001), Reading hypertext and the experience of literature. *Journal of Digital Information, 2*(1).

Miller, D. & Glover, D. (2010). Enhanced interactivity in Secondary Mathematics. In M. Thomas & E. Cutrim Schmid, *Interactive whiteboards for education: Theory, research and practice* (pp. 118-130). USA: IGI Global.

Ministry for Education, Employment and the Family. (2008). *Smart Learning: Malta's National eLearning Strategy 2008-2010.* Malta: Salesian Press.

Ministry for Education, Employment and the Family. (2011). *The National Curriculum Framework 2011 Consultation Document 1, 2 and 3.* Malta: Salesian Press.

Ministry for Education, Employment and the Family. (2011). Tomorrow's *schools: Developing effective learning cultures.* Malta: Salesian Press.

Ministry for Education, Employment and the Family. (2012). *The National Curriculum Framework 2012.* Malta: Salesian Press.

Ministry for Education, Employment and the Family. (2014). *A National Literacy Strategy For All in Malta and Gozo 2014-2019*. Malta: Salesian Press.

Ministry for Education, Employment and the Family. (2014). *Framework for the Education Strategy for Malta 2014-2024.* Malta: Salesian Press.

Ministry of education, youth and employment, (1999). National Minimum Curriculum. Malta: Salesian Press.

Ministry of Education, Youth and Employment. (2005). *For All Children to Succeed.* Malta: Salesian Press.

Ministry of Education, Youth and Employment. (2008). *The Malta National eLearning Strategy.* Malta: The Smart Island.

Moll, L., Amanti, C., Neff, D., & Gonzalez, N. (1992). Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms, *Theory into practice, 31*(2), 132-141.

Morgan, D., L. (2006). Focus groups. In V. Jupp (Ed.), *The Sage Dictionary of Social Research Methods* (pp. 121-123). London: SAGE.

Morgan, H. (2011). Using handheld wireless Technologies in school: Advantageous or disadvantageous? *Childhood Education 87*(2), 139-142.

Morgan, H. (2013). Technology in the classroom: Using Skype for exciting projects, *Childhood Education, 89*(3), 197-199.

Morrison, K. (2006). Sensitive educational research in small states and territories: The case of Macau. *Compare, 36*(2), 249-264.

Moss, G., Carey, J., Levaaic, R., Armstrong, V., Cardini, A., & Castle, F. (2007). *The interactive whiteboards, pedagogy and pupil performance evaluation: An evaluation of the schools whiteboard expansion (SWE) project: London challenge.* England: University of London.

Musti-Rao, S., Cartledge, G., Bennett, J.G., Council, M. (2015). Literacy instruction using technology with primary-age culturally and linguistically diverse learners. *Intervention in school and clinic, 50*(4), 195-202.

National Council of Teachers of English. (2008). *Toward a definition of 21st Century literacies.* A position statement of the NCTE Executive Committee. Retrieved September 30, 2012 from: http://www.ncte.org/print.asp?id=129117&node=65

Neumann M., M. & Neumann D., L. (2014). Touch screen tablets and emergent literacy. *Early Childhood Education, 42,* 231-239.

New London Group. (1996). A pedagogy of multiliteracies: Designing social futures, *Harvard Educational Review, 66*(1), 60-92.

Ng, W. (2012). Can we teach digital natives digital literacy? *Computers and Education, 59*(3), 1065-1078.

Ng, W. (2015). New digital technologies in education: Conceptualising professional learning for educators. New York: Springer.

Nutbrown, C., Clough, P., Levy, R., Little, S., Bishop, J., Lamb, T., Yamada-Rice, D. (2016). Families' roles in children's literacy in the UK throughout the 20th Century. *Journal of Early Childhood Literacy, 0*(0), 1-19.

O'Mara, J. & Laidlaw, L. (2011). Living in the iworld: Two literacy researches reflect on the changing texts and literacy practices of childhood. *English Teaching: Practice and critique, 10*(4), 149-159.

Opdenakker, R. (2006). *Advantages and disadvantages of four interview techniques in qualitative research.* Retrieved February 3, 2014 from: http://www.qualitative-research.net/index.php/fqs/article/view/175/392

Orlando, J. (2011). *How young is too young? Mobile technologies and young children*. Retrieved August 21, 2012 from: http://learning21c.wordpress.com/2011/08

Pahl, K. (2005). Narrative spaces and multiple identities: Children's textual explorations of console games in home settings. In J.Marsh, (Ed.) *Popular culture, new media and digital literacy in early childhood (*pp 126-145). New York: Routledge Falmer.

Palmer, S. (2006). *Toxic Childhood.* London, England: Orion Press.

Patten, K. B., & Craig, D. V. (2007). E-literacy and literacy: iPods, popular culture and language learning. *International Journal of the Book, 4*(1), 69-74.

Patton, M. Q. (1990). *Qualitative Evaluation and Research Methods (second edition).* London: Sage.

Pellegrini, A., & Galda, L. (1998). *The development of school-based literacy: A social ecological perspective.* London, England: Routledge

Prensky, M. (2001). Digital Natives. Digital Immigrants Part 1, *On the Horizon*, *9*(5), 1-6.

Prensky, M. (2004). *The emerging online life of the digital native: What they do differently because of technology, and how they do it.* Retrieved February 15, 2013 from: http://www.marcprensky.com/writing/Prensky-The_Emerging_Online_Life_of_the_Digital_Native-03.pdf

Prensky, M. (2005). Listen to the natives. *Educational Leadership, 63*(4), 8-13.

Programme for International Student Assessment, *PISA 2009+ Malta Report*, (2013), Malta: Ministry for Education and Employment.

Ray, B. (2002). PDAs in the classroom: Integration strategies for K-12 educators. Retrieved March 10, 2013, from www.ed.uiuc.edu/ijet/v3n1/ray/index.html

Reinking, D., McKenna, M. C., Labbo, L.D., & Kieffer, R. D. (Eds.). (1998). *Handbook of literacy and technology: Transformations in a post-typographic world.* Mahwah, NJ: Lawrence Erlbaum.

Roberts, P. (1995). Defining literacy: Paradise, nightmare or red herring? *British Journal of Educational Studies, 43*(4), 412-432.

Rowsell, J., & Walsh, W. (2011). Rethinking literacy education in new times: Multimodality, multiliteracies and new literacies. *Brock Education 21*(1), 53-62.

Rowsell, J. (2013). *Working with multimodality: Rethinking literacy in a digital age.* New York: Routledge.

Rushkof, D. (2006). *Screenagers: Lessons in chaos from digital kids.* Incorporated: Hampton Press.

Schachter, R. (2009). Mobile devices in the classroom. *District Administration, 45*(10-11), 30-36.

Schratz, M. & Steiner-Loffler, U. (1998). Pupils using photographs in school self-evaluation in image based-research. In J. Prosser, (Ed.), *A sourcebook for qualitative researchers,* (pp.235-251). London: Falmer Press

Selwyn, N. (2004). The information aged: A qualitative study of older adults' use of information and communications technology. *Journal of Aging Studies, 18*(4). 369-384.

Shanis, J. & Hedge, A. (2003). Comparison of mouse, touchpad and multitouch input technologies. *In proceedings of the human factors and ergonomics society 47th annual meeting*, 47(4), 746-750.

Simpson, A., Walsh, M., & Rowsell, J. (2013). The digital reading path: researching modes and multidirectionality with iPads. *Literacy, 47*(3), 123-130.

Slay, H., Sieborger, I., & Hodgkinson-William, C., (2008). Interactive whiteboards: Real beauty or just "lipstick"? *Computers and Education, 51*, 1321-1341.

Smith, H. J., Higgins, S., Wall, K., & Miller, J. (2005). Interactive whiteboards: boon or bandwagon? A critical review of the literature. *Journal of Computer Assisted Learning, 21*(2). 91-101.

Soloway, E. (2000). Supporting science inquiry in K-12 using Palm computers: A Palm manifesto. Retrieved January 27, 2013, from www.pdaed.com/features/palmmanifesto.xml

Spradley, J. P. (1980). *Participant Observation.* New York: Hold, Rinehart & Winston.

Steiner, C. (1997). *Achieving emotional literacy.* New York: Simon and Shuster.

Street, B. (Ed.), (1993). *Cross-cultural approaches to literacy.* Cambridge University Press, New York.

Street, B. V., & Lefstein, A. (2007). *Literacy: An advanced resource book.* New York: Routledge.

Sultana, R. (1997). *Education in Malta: An overview.* Malta: PEG Publishers.

Synder, I. (Ed.) (1997). *From page to screen. Taking literacy into the electronic era.* Sydney: Allen and Unwin.

The High Level Group. (2012). *EU, High Level Group of Experts on Literacy - Final Report 2012.* Retrieved June 8, 2012 from: http://ec.europa.eu/education/policy/school/doc/literacy-report_en.pdf

The Joan Ganz Cooney Centre, (Spring 2012), *Print Books vs EBooks.* Retrieved from: http://www.joanganzcooneycenter.org/wp-content/uploads/2012/07/jgcc_ebooks_quickreport.pdf

Theodosakis, N. (2001). *The director in the classroom: How filmmaking inspires learning.* San Diego, CA: Tech4Learning.

Thomas G. (2011). *How to do your case study: A guide for students and researchers*. London: SAGE.

Thomas, M. & Cutrim Schmid, E. (2010). *Interactive whiteboards for education: Theory, research and practice.* USA: IGI Global.

Thomas, M. (2011). *Deconstructing digital natives. Young People, technology and the new literacies.* UK: Routledge.

Twenge, J. (2006). *Generation Me: Why today's young Americans are more confident, assertive, entitled – and more miserable than ever before.* New York: Free Press.

Twiner, A. (2010). Interactive whiteboards and the discourses of transformation, affordance, orchestration and participation. In M. Thomas & E. Cutrim Schmid, *Interactive whiteboards for education: Theory, research and practice* (pp. 37-52). USA: IGI Global.

Tyner, K. (1998). *Literacy in a digital world.* USA: Lawrence Erlbaum Associates, Inc., Publishers.

Tyre, T. (2002). Handheld computers play a productive role in K-12 teaching and learning. *Education in Hand*, *38*(11), 19-22.

UNESCO (2004). *The plurality of literacy and its implications for policies and programmes position paper.* Paris: UNESCO.

UNESCO (2005). *Aspects of literacy assessment: Topics and issues from the UNESCO expert meeting.* Paris: UNESCO.

UNESCO. (2006). *Chapter 6: Understandings of literacy. Education for all global monitoring report.* Retrieved February 12, 2013 from: http://www.unesco.org/education/GMR2006/full/chapt6_eng.pdf

University of Sheffield. (2015). *Research Ethics: General Principles and Statements.* Retrieved May 13, 2013 from:

http://www.sheffield.ac.uk/polopoly_fs/1.89609!/file/General-Principles-and-Statements-vs2.pdf

Vaughn, S., Schumm, J. S. & Sinagub, J. M. (1996). *Focus Group Interviews in Education and Psychology.* UK: Sage Publications.

Wall, K., Higgins, S., & Smith, H. (2005). The visual helps me understand the complicated things: Pupil views of teaching and learning with interactive whiteboards. *British Journal of Educational Technology, 36*(5), 851-867.

Wallace, C. (2002). Household strategies: Their conceptual relevance and analytical scope in social research. *Sociology, 36*(2), 275-292.

Walsh, M. (2010). Multimodal literacy: What does it mean for classroom practice? *Australian Journal of Language and Literacy, 33*(3), 211-239.

Wang, L. (2005). The advantages of using technology in second language education. Technology integration in foreign language teaching demonstrates the shift from a behavioural to a constructivist learning approach. *T.H.E. Journal, 32*(10), 38-42.

Willingham, D. (2016, July 31). Is listening to a book 'cheating'? *The Washington Post*. Retrieved from: https://www.washingtonpost.com/news/answer-sheet/wp/2016/07/31/is-listening-to-a-book-a-cheating/

Winnicott, D.W. (1971). *Playing and reality.* London: Tavistock Publ.

Woodward, J., & Cuban, J. (2011). *Technology, curriculum and professional development. Adapting schools to meet the needs of students with disabilities.* California: Corwin Press, Inc.

Yamada-Rice, D. (2014). The semiotic landscape and 3-year-olds' emerging understanding of multimodal communication practices. *Journal of Early Childhood Research, 12*(2), 154-184.

Yamada-Rice, D., (2010). An enquiry into children's home visual communication practices. *Journal of Early Childhood Literacy, 10*(3), 341-363.

Yanez, L. & Coyle, Y. (2010). Children's perceptions of learning with an interactive whiteboard. *ELT Journal, 65*(4), 446-457.

Younger, M. & Warrington, M. (2006). Differential achievement of girls and boys at GSCE: Some observations from the perspective of one school. *British Journal of Sociology of Education, 17*(3), 299-313.

Zammit, L. (2004). *ICT Literacy and education in Malta, rising to the challenge.* Malta: Department of eLearning.

APPENDIX A

Observation Guidelines

Observation Guidelines

Record the following:

- Day, date and time of observation
- Subject being taught
- Class being observed

Observe the following:

- Students' attitudes
- Classroom environment
- Students and their relationships with their peers and superiors
- Students' behaviour
- Students' actions and activities
- Teachers' instructions
- Students reading and writing activities in class

Further observations/questions:

- What is happening in the classroom context?
- Is technology being used to assist with reading and writing activities? How?
- When is digital technology being used?
- How do students behave when digital technology is being used?
- How are students observed to read and write within the classroom context?
- Do students look at images whilst reading?
- Are students invited to read books in class? When?
- Do students choose their own book from the library? How do they do this?
- What type of reading and writing styles are students engaged in?
- What do students do after they finish their school work activities?
- Are students engaged in group work activities? When? How often?
- Do students use technology when working in groups?
- How do students present their work?
- Are students being exposed to various reading and writing resources?
- Which technological resources are commonly used and how do students respond towards their use?

APPENDIX B

Focus Group Questions

Focus Group 1

Before starting the session give each student his/her drawing. Invite each student to discuss his/her drawing. The following questions might be used as guidance.

1. Can you start by telling us your name?
2. We are now going to take it in turns to discuss our drawings. Can you talk about your drawing with the rest of the group?
3. What did you draw?
4. Did you choose to draw yourself reading and/or writing?
5. Did you draw anyone else? If so, who and why did you decide to draw them?
6. Where did you draw yourself?
7. Why did you choose that environment?
8. What emotions are the figures in your drawing showing?
9. Did you include text or verbal callouts in your drawings? What do they say?
10. Where do reading and writing activities take place?
11. What tools do you use to read and write?

Focus Group 2

Leading questions

1. Do you enjoy coming to school? Why/Why not?
2. Why do you come to school?
3. What do you learn at school?
4. What do you do at school? Can you describe an ordinary school day?
5. What do you like best about coming to school?
6. What activities do you do at home after school, during weekends and holidays?

   Note: Depending on the responses you might be able to use these questions as an opportunity to probe further – for example if they talk about learning to read at school then you can ask them to expand on what they mean by this and encourage them to talk about the various resources they use for reading etc.

---

7. Now I would like you to imagine that an alien had to walk in class right now. Imagine that this little alien has never been on Earth but can understand English perfectly and he would like to know what the word 'technology' means. How would you explain it to him? Can you come up with another word for 'technology' that would be easier for the alien to understand?
8. What is technology? Do you like it? Why/Why not?
9. Do you feel that using such devices are helping you learn in any way? How and why? Can you give me some examples?

10. Which technologic devices are being used in class to help you learn?
11. Why do use technology in class?
12. Why do you think the teacher uses technology to teach?
13. Do you use technological devices at home? Can you give me some examples? Which is your favourite?
14. How often do you use technology at home?
15. Let's imagine that the little alien I referred to before is now interested in knowing what 'reading' and 'writing' are. How would you explain what 'reading' is? How would you explain what 'writing' is?
16. Do you like reading and writing? Which do you like most? Why/Why not?
17. Do you practise reading and writing at school and home? How? Can you give me some examples?
18. Which is your favourite technologic device? Why? Does everyone in class use it? What capabilities does one need to use such devices?
19. Can you explain to the alien how technology helps you learn in a way that is different from a book?
20. How do you understand what is on the screen? What do you look at? Do you have to read many words – and/or do you use other things (pictures/sound/icons) to help you use the technology?
21. How do you produce words on technological devices at school and home? Can you give me some examples? Did someone teach you how to produce text on screen?
22. Do you think technology helps or influences your learning in any way? How and why?

Focus Group 3

1. What is ‘reading’ and ‘writing? (Alien example)
2. Do you read/write at school? When? How?
3. I have noticed that the teacher tells you to read a book whenever you are ready from your work. Do you enjoy reading at that time?
4. Do you like your class library? Why? Why not?
5. How do you choose a book? Do you look at the title/text/pictures/blurb?
6. What type of books do you like?
7. Can you describe what exactly you do when you first get a new book (probe- look at the back, start reading the first sentence, look ast the pictures).
8. What do you look at when reading from a book?
9. How do you feel when the teacher asks you to read infront of the class?
10. Do the pictures help you understand what you are reading or are they just nice to look at?
11. If they do help, how exactly – what do you do with the pictures? Do you go back and forwards between the printed text and the pictures?
12. Do you think that pictures are important? Do you prefer a book with pictures or without? Why?
13. Would you prefer reading/writing from a tablet or reading/writing on a book/copybook? Why? Do you feel more/less confident reading on screen/paper?
14. Which strategies do you use to read print on screen and in books?

15. Are visual images more/less important for you within either of these contexts?

16. What do you look at when the teacher makes use of an e-book on the interactive whiteboard? Where do you focus? Do you follow the text which is being read? Do you look at the pictures? Do you develop the story?

17. Can you talk about the ways in which you write on screen and on paper?

18. Which writing methods do you prefer and why? (use of pencil/stylus/keyboard)

19. Do you feel that reading and writing in school is changing? Do teachers teach and do you learn the same as or different from previous years?

20. To what extent do you feel that reading and writing on screen is the same kind of process as reading/writing on paper? What is similar/different? How do you feel about that what is valued in school/at home?

APPENDIX C

Semi-structured Interview Questions

1. How long have you been teaching? Have you always taught in the school you currently work in?
2. How do you feel working in your current work place?
3. How would you define your role as a literacy/primary teacher?
4. How would you define 'literacy' in the 21st century? Do you feel as if literacy, reading and writing have changed in the last couple of decades?
5. In your opinion do schools make the most of the technological advances of the 21st century?
6. What do you think teachers think about using technology devices in the classroom and what benefits, if any, do they bring to the classroom environment?
7. What do you think students think about using technology devices in the classroom?
8. Do you feel you use technology integrally in your everyday teaching?
9. How, and in what ways has the teaching and learning of literacy changed with the introduction of technological devices in the classroom?
10. Do you believe that students are reading and writing differently now that they use technology in class?
11. Do you think that technology is influencing the way students read and write?
12. Do you believe technology can be regarded as a strength and/or limitation? Why? Do you think it improves or in any way inhibits children's reading and writing skills?
13. Do you believe that technology is having an influence on how teachers teach and how learners learn? If so, how do you feel it is influencing the way teachers teach? How is technology influencing the way students learn?
14. Who do you think benefits most through the use of technology at school?

15. What type/style of teaching do you feel that technological devices are promoting in the 21st Century classroom? Why do you think so?
16. Do you feel that you have changed your teaching style or professional practices in any way due to technological advancement? If so, how?
17. Which reading and writing methods do you believe students prefer to use in class?
18. How is technology being used to teach reading and writing?
19. How has technology changed and modified constructions of reading and writing?
20. How is technology having an impact upon children's reading and writing of text?
21. Do you believe that students of the 21st Century are different learners due to technological advancement?

APPENDIX D

Ethical Review

The University Of Sheffield.

Approved: 15/10/2014

Melanie Darmanin
Registration number: 110151618
School of Education
Programme: PhD/Education (Malta)

Dear Melanie

PROJECT TITLE: Reading and writing in the digital age
APPLICATION: Reference Number 001644

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 15/10/2014 the above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation that you submitted for ethics review:

- University research ethics application form 001644 (dated 10/09/2014).
- Participant information sheet 002725 version 1 (08/09/2014).
- Participant information sheet 002413 version 1 (08/08/2014).
- Participant information sheet 002414 version 1 (08/08/2014).
- Participant information sheet 002416 version 1 (08/08/2014).
- Participant information sheet 002417 version 1 (08/08/2014).
- Participant consent form 002418 version 1 (08/08/2014).
- Participant consent form 002419 version 1 (08/08/2014).
- Participant consent form 002420 version 1 (08/08/2014).
- Participant consent form 002421 version 1 (08/08/2014).

If during the course of the project you need to deviate significantly from the above-approved documentation please inform me since written approval will be required.

Yours sincerely

Professor Daniel Goodley
Ethics Administrator
School of Education