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Digital Literacy in English Schools: A Foucauldian Analysis of Policy

By:

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Abstract

The perceived importance of digital literacy has steadily risen in England in recent years. Successive governments have backed initiatives which, no matter the term used for the assorted skill set involving computers, called for greater integration of technology in education. With the introduction of the English National Curriculum in 1988 to its current incarnation in 2016, it is possible to track the achievements and targets that policy makers believe students should meet. During this time, a wave of scepticism surrounding the usefulness of technology-based learning can be found. In response to a recent article by Selwyn & Facer (2014) which calls for more investigation of technology in education from disparate perspectives, this study takes a Foucauldian-based approach to analyse historical and future digital literacy policy in English schools.

After establishing the historical context through a literature review, the policy analysis is structured to address each of the three research questions. Finally, I provide suggestions for how researchers could continue with a similar Foucauldian analysis as I have used in this work.

The Foucauldian framework presented in the Methodology section is advantageous for deconstructing the systems of power and knowledge surrounding policy decisions regarding digital literacy. Noticeably, while discourses relating to digital literacy have been variously embedded, developed and changed through successive governments since 1988, a constant theme is one of normalisation of newly established truths. That is to say, I have seen through this work, how initial claims have gradually been accepted into educational discourse. Throughout this period, however, I have seen how teachers and students have often been blamed if government targets have not been met; targets which seem to have arisen from assumptions about what it means, or should mean to be digitally literate.

Finally, remaining within this Foucauldian framework, suggestions for future policy and predicted technological progressions are given.

Contents

Chapter 1: Introduction

1. Introduction

The following chapter is dedicated to introducing the thesis and providing an overview of the rest of the chapters. It is also in this section that I give a value statement stating my personal influences and reasons for conducting this research.

1.1. Values Statement

To begin, I believe it necessary to elaborate on my personal viewpoint. As was revealed during the first-year of this doctorate programme (Carr, 1995; Greenbank, 2003), it is extremely difficult, if not impossible, to remove personal values from research and policy. During my first assignment, a concluding remark was that a researcher's viewpoint or values ought to be laid out upfront so as to not mislead the potential audience as to the intention of the writing. I still believe this and, in the interest of consistency and what I believe to be an obligatory action, dedicate a certain number of words to the following value statement. It is my hope that through such a statement, the reasoning behind the use of Foucault's work in my own will become clear. The origins of my captivation of power and truth were not originally grounded in Foucauldian perspectives. That is to say I did not decide arbitrarily one day to agree with Michel Foucault on everything, or even most things. I divulge in greater detail 'Foucauldian' ideology in Chapters 3 and 4, the Literature Review and Methodology sections respectively.

One of the prime reasons I am drawn to research in the area of digital literacy is because of my computer science background and love of technology. Initially, I came into the research not from a neutral position, though such ideological neutrality is

likely not to exist (Chambers, 2013), but as a person whose job requires computers. I have experience in developing websites, programming, building personal computers and maintaining corporate servers and databases. These are all standard qualifications for server administrators and technicians, positions I held at certain points in my life, and have assisted in giving a boost towards technology usage in the various educational fields in which I have worked. As a member of Generation Y – or the Millennials – I grew up during an era where the Internet was just becoming mainstream and my life was, in my opinion, influenced for the better by it. These experiences have crafted my background to this study and it is worth noting that I am not, nor could I ever be, neutral to the usage of technology in education due to my advantage of embracing it and growing up around it.

Being born at the 'right time' has placed me into the 'Digital Native' category (Prensky, 2001a, 2001b) which, according to some, gives me an advantage – or rather gives those born a generation before me a disadvantage – though I object to this blanket categorisation throughout the coming chapters as it is too generalised and inaccurate. Indeed, a person born at the right time and with parents, like mine, who decided that their children would need the latest trinkets would be privileged enough to learn a thing or two about computers but this may not necessarily set up that person to learn in the best possible ways with those digital tools. After all it is my experience of going through the school system, finding it lacking in my own and other students' digital needs, which led me to this research and frames the research questions in Chapter 2.

To put it simply, I am confident with using computers and therefore I came into this doctorate programme strongly on the pro-technology side, at least before the extensive reading which is included in the Literature Review (Chapter 3). In the

Conclusion (Chapter 8) I describe the effect this research has had on how I see technology as a tool for education and its place in schooling. Initially I was of the mind that schooling and its associated bureaucracy often hinder more than assist in educating young minds. As an advocate of home schooling and self-directed learning (Hiemstra, 1994), my stance on education likely differs from the mainstream researcher. In the interests of the importance of the above-mentioned value statement, the reader should be aware that I am coming from this perspective. That is not to say that I find schooling to be worthless, however, just that recent advancements in technology support the digitally literate individual faster, and more personally, than schools are able. What is meant by digital literacy differs from person to person, period to period, and policy to policy. This is explored further in the Literature Review (Chapter 3).

Apart from my personal interest in technology as highlighted above, the background reading for some of the initial doctoral assignments led me to an article by Selwyn and Facer (Selwyn & Facer, 2014) calling for more research in the area of technology in education from multiple perspectives:

> […] the increasing normalisation of digital technology requires a sustained and substantial response from across all facets of the sociology of education (Selwyn & Facer, 2014: 483)
>
> […] digital technology should be a broad concern for *all* education researchers, regardless of specialisation or background. It addition, it could be argued that there are growing opportunities of educational practices and institutions that reflect, challenge and build upon the wider socio-technical changes of today (ibid.)

It was here that I discovered that, while digital literacy has been the focus of researchers for many decades – though often not under this label – the Foucauldian perspective I could apply was underutilised. Indeed, while Foucault has provided the

methodology for much educational research in general, with entire books dedicated to explaining how to apply his theories as intended (Ball, 2013; Jardine, 2010), there appeared to be a gap in the literature of focusing directly on Foucauldian analysis of digital literacy usage specifically. The methodological framework provided by Foucault is more than enough for such an analysis, with multiple perspectives available for study, although the scale of such a project mandates restrictive measures to keep within defined word limits, not to mention plausible timeframes. Therefore, a unique selection of Foucault's techniques was designated specifically for this analysis using a method known as a 'tool-kit' approach, described (Allen, 2012) as a way to utilise only what one needs from his work for the specific task at hand. How I approached the tool kit is elaborated in Chapter 4 – *Methodology*.

Background reading over the course of this programme has also suggested that the established 'truths' of education, particularly where fault lies in the (lack of) utilisation of technology usage in schools, may not be as clear cut as it is made out. Thus, this analysis is all the more required from a Foucauldian perspective. This is because what is recognised as 'true' is often fluid and contingent on who has the power to influence knowledge. These themes are discussed further in the *Findings* section (Chapter 5).

1.2. On Terminology

Terminology is an important matter in research as proper definitions and explanations can avoid misunderstandings. It is necessary at this point to explain some of the vocabulary used within.

One issue that became apparent very early on in my research was the need to narrow my analysis to the context of England and locating documents specifically relating to the country. Where possible, policy relates to England rather than, for example, another constituent country of the United Kingdom such as Scotland where education and schooling is different. Throughout the thesis, documents identified often bear the name 'UK', 'United Kingdom', 'Great Britain' or 'British'. This is because edicts affecting English education come from the British government and there is currently no devolved parliament for England. Indeed, a search for *English Government* on popular search engines returns results for the United Kingdom. This dates to the merger of England and Scotland in 1707 and there has not been a de facto 'English' parliament since. England's de jure parliament is the Parliament of the United Kingdom of Great Britain and Northern Ireland. The reader should note then that while the study is an analysis of English schools alone, circumstances dictate that references to the 'British' and 'UK' government be made.

This thesis also uses the word 'technology', which, unless mentioned otherwise, refers to the use of computers and newly introduced electronic equipment in education. It is often used as the hardware component required for another term, used in the title, which desperately needs a solid definition: digital literacy. This term is explored in detail in Chapter 3 –*Literature Review*.

The next sections give an overview to the rest of the thesis, on a chapter-by-chapter basis. This is to provide an overview to each chapter and to act as a guide to the work.

1.3. The Nature of the Study

This study is a policy analysis with a focus on policy documents rather than fieldwork interviewing teachers or students on their opinions regarding digital literacy skills. While this allows for an analysis solely of government acts and their supporting documents, the weakness of such an approach risks the analysis being framed from a singular voice – my own – and this is elaborated on in Chapter 7 – *Limitations*. This thesis should be viewed as the starting point in a project I wish to continue and involving empirical qualitative analyses of policy makers, teachers, and students. It is vital to continue in this fashion lest the research fall into a hypocritical situation of describing subjective truths yet only using one person's point of view. Therefore, it is hoped that the reader can appreciate this study as the groundwork for future aspirations in this field. Nevertheless, it is intended to stand as a study in its own right.

1.2. Overview to Chapters

1.2.1. Research Questions

Chapter 2 provides the three main research questions for this study with elaboration as to their purpose. These questions were first tentatively introduced as the basis for the research during the Project Proposal stage two years ago (Assignment 6[1] of the EdD at Sheffield) and stem from my personal experience with technology usage in schools, Master's level research projects, and the governmental push for usage of technology. They cover the past definitions of digital literacy, effects of policy on

[1] The Doctor of Education degree at the University of Sheffield consists of two years of coursework followed by two or more years of research resulting in the creation of a thesis. During the coursework years, six 6,000 word assignments must be completed relating to educational practice and contemporary debates.

practice, and whether policy makers are aware of research in this field. These questions underwent a series of changes since their conception to reflect the developments in my thinking from planning the project to its execution.

1.2.2. Literature Review

Chapter 3 reviews the literature and is divided into three major sections: Defining 'digital literacy'; historical predictions of digital literacy's role in the future; and a background to Foucault's theories including why he was chosen over others such as Habermas and Bourdieu. Also included in this third section, are student and teacher opinions regarding technology usage as it is important to know what educators and pupils think about what their schools are choosing to teach and whether the tools or skills are useful to students and whether teachers deem them suitable. Part of this section reveals the changing discourse surrounding technology over the years where various governments have controlled England's education system.

1.2.3. Methodology

Chapter 4 discusses the methodology used throughout the analysis. The Foucauldian analytical devices selected are drawn from the overarching 'theories' that Foucault provides. Specifically, the 'tool-kit' approach is described in detail assessing which parts of Foucault's work are important for the educational based research I have conducted and which I have therefore selected to include in this thesis. This section also contains the selected policy documents for analysis accompanied by their selection criteria.

1.2.4. Findings

Chapter 5 is split into sections matching the research questions (Section 5.1, 5.2, and 5.3). Although the analysis starts from 1988 when the National Curriculum was introduced, it was not created in isolation from the events leading up to it and consequently the proceeding years are covered in less detail, where they apply. Throughout this chapter, the Foucauldian ideas presented in the Methodology section are applied to the selected policy documents and policy suggestions.

1.2.5. Suggestions for the Future

Chapter 6 describes possible future technology issues we might face using the same Foucauldian ideas in Chapter 5 and builds upon Chapters 2 to 4. In this chapter, predictions are not based around prognostications of Central Processing Unit (CPU) speed or the Random Access Memory (RAM) that will be required to run applications decades from now. This has not been an effective strategy for other researchers as the numbers given are often far off the mark and only based on what is possible in their own time but increased by an arbitrary magnitude. Instead, suggestions are based on the kinds of technologies that are being advocated today and are assumed to be mainstream in the future. Unlike raw numbers, these can be analysed from the same Foucauldian perspective identified in the *Methodology* (Chapter 4) section.

1.2.6. Limitations of this Study

Inevitably, this study is not without its limitations and Chapter 7 explores missing elements and suggests areas for improvement for future research. The chapter reflects on factors which affected the construction of this thesis, such as time availability, the advantages and disadvantages of not interviewing stakeholders or other potential participants, and finance, for example.

1.2.7. Conclusion

The final chapter concludes the thesis by summing up the previous seven chapters, demonstrating the contribution to existing knowledge in this field, and presents my own reflective comments. Chapter 8 also gives me an opportunity to reflect upon my initial thoughts regarding digital literacy before the two-year period of study that culminated in the creation of this thesis.

Chapter 2: Research Questions

With the Introduction (Chapter 1) describing why I am interested in this research, and giving an overview to the rest of the thesis, below I present the research questions and focus. The following questions were initially described in Doctoral Assignment 6, the project proposal, and therefore the assignment is referred to regarding changes to questions from that stage. The research questions have been modified from their original forms, and from previous drafts of this thesis, as mentioned in Section 1.2.1.

Question 1:

"How has digital literacy been defined and implemented by policy steering?"

The first question sets out to define exactly what digital literacy means. As this study analyses documents spanning several decades, the definition of this slippery term, if any, is likely to have evolved because technology itself has advanced in that time, so that users of digital tools can now do new things because of the technological developments. After exploring the term 'digital literacy', the next part explores how, if at all, successive governments seem to have intended to achieve their established goals. This research question is answered in the *Literature Review* (Chapter 3) and the *Findings* (Chapter 5), with the former giving the various definitions over time, culminating in a chosen modern definition for the study at hand, to the latter which uses this definition to establish if the policies met and currently meet targets. As technology is constantly changing, most notably with the introduction of high-speed Internet in the early 2000s, the ever-fluctuating targets for technology integration in schools and the teaching of these skills is considered. In Assignment 6 of my EdD, I suggested that the government should have given basic IT skills, relevant to contemporary expectations, equivalent status to the core skills of mathematics,

English, and science (Chambers, 2014b). This is also investigated throughout the *Findings* (Chapter 5).

Question 2:

"What have been the effects of policy suggestions and decisions on practice?"

This question seeks to discover whether policies had noticeable effects on teaching and the implementation of technology in schools. The answer to this question is split into Chapter 3 – the *Literature Review*, and Chapter 5 – *the Findings*. In the former, the relevant literature is presented, giving a background to digital literacy and technology policies in England. In the latter, policy is analysed through a Foucauldian lens establishing which policies were most influential, how they affected practice, and whether the implementation was successful.

Question 3:

"How has research influenced policy decisions?"

This question arose from my initial background reading which indicated that:

> In addition to developing policy without drawing upon research evidence, during the 1980s the Department of Education and Science and, for the most part, the Department of Trade and Industry, avoided commissioning evaluation studies of their new technology initiatives (Somekh, 2000: 23).

Somekh identifies the importance of reflecting on existing research and the need to evaluate policy decisions. Rushby & Seabrook (2008) note that in the past, studies have been routinely and repeatedly criticized for not taking previous policy decisions into account.

Chapter 3: Literature Review

In this chapter, I have organised my review of the literature into three main sections: a digital literacy section which includes historical, governmental, and contemporary debates and definitions; a section on historical predictions about the future – that is how researchers thought technology would look today; and thirdly, information relating to Foucault, including how Foucault's theories compare to other key philosophers – Habermas and Bourdieu – and an explanation of how the concepts and theories of these social researchers have not been used over Foucault. The benefit of organising the literature review in this way is not only to present the initial background to the study, but also to develop a strong foundation to the Research Questions found in Chapter 2. Additionally, the final Foucault portion of the review, found in Section 3 below, offers a lens through which to analyse policy decisions and influences on practice in Chapter 5. Together, these parts inform the methodology, located in Chapter 4, for analysis of the policy documents. To aid the reader, each of the three research questions from Chapter 2 is supported in the following sections:

Question 1: "How has digital literacy been defined and implemented by policy steering?"

Sections 3.1, 3.2 and 3.3, specifically the sections on the definitions of digital literacy, historical concerns, and contemporary usage.

Question 2: "What have been the effects of policy suggestions and decisions on practice?"

Section 3.3 offers the background to this question regarding policy's effect on practice and implementation.

Question 3: "How has research influenced policy decisions?"

As this question contributes to and works with Question 2, the foundation is also set up from Section 1, with information from Section 2.

3.1. On Digital Literacy

As the longest section in this chapter, certain articles, books, and other relevant readings are given 'long shots, medium shots and close-ups' (Rudestam and Newton, 1992: 51). That is, the more germane a piece of information is, the more focus is placed upon it. Background literature – such as that found pertaining to worldwide educational contexts – is used only in passing where applicability to the narrower focus on England is not useful.

Literacy itself is not a static term. The most traditional sense of the word implies the ability to read and write (Moats, 2000); the term has been thought of as an autonomous practice (Goody, 1986); has been extended to a social, ideological context-based practice (Street, 1984); and applied to a larger grouping called 'multiliteracies' (Selber, 2004). The plural form *literacies* is now the more common for grouping the multitude of 'new literacies' (Gee, 1996; Street, 1995; Kress, 2003), the focus of study long ago expanded to include culture, history, religion, and communities (Knobel 1999, Gee, 1996).

Davies and Merchant (2009) additionally state:

> text is often much more than communication through the written word, since meanings are constructed also through sound, image and gesture as well as their interaction (p. 14)

Each new definition brings new avenues of study. Burnett, Davies, Merchant and Rowsell (2014) explain:

> literacy – or literacies have mutated and diversified as different populations have explored and taken up the possibilities offered by new media and digital communication.

> In fact from a social practice perspective, how we describe and define literacy, and ultimately what counts as literate behaviour is inseparable from its context – and that context […] is rapidly changing. These changes in the communicative context suggest that literacies are increasingly multiple, multimodal and mediated through new technology (Burnett et al., 2014: 1).

This explanation, with its focus at the end of mediation through technology suggests that defining literacy to reading and writing alone is obsolete in the social realm.

New literacies involving technology are referred to under many different labels such as 21st century literacies, internet literacies, new media literacies, information literacy, computer literacy, or as this thesis utilises, digital literacy. While oftentimes overlapping in their meaning, they are still classed as part of the broad overreaching 'new literacies' category (Buckingham, 1993). Coiro, Knobel, Lankshear, and Leu (2008: 10) state that all the above labels 'refer to phenomena we would see as falling broadly under a new literacies umbrella'. Therefore, throughout this thesis I adhere to the term 'digital literacy' due to its current usage by government sources, as will become apparent from continued reading, and only deviate from this term when certain policy specifically mentions skills which do not apply to the meaning established in modern usage.

The definition of digital literacy is, however, still problematic. Not just because of the vast amount of competing definitions from various researchers, but due to its meaning, along with the other synonymous terminology having changed over the past four decades. As mentioned above, it is part of the umbrella term (Coiro et al., 2008: 10) 'new literacies', which itself has been established in academia for over two decades (Buckingham, 1993). The term digital literacy appears to have been used in a broad sense since Gilster (1997), where he describes, to what would at the time be an audience of new Internet users, what it means to be 'digitally literate':

> Digital literacy is the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers. (1997: 1)

After comparing it to 'regular' literacy – which even in 1997 went beyond simply reading (ibid.: 2), Gilster gives a narrower definition:

> Digital literacy likewise extends the boundaries of definition. It is cognition of what you see on the computer screen when you use the networked medium. (ibid.: 2)

At this point, it should be noted that Gilster wrote this book before corporations such as Alphabet Inc. (previously known as Google Inc.) fundamentally changed the way we interact with computers. Nevertheless, some parts of this older definition, one could argue, are still relevant. With Web 2.0 technologies, content with an emphasis on user-creation, (Davies & Merchant, 2009: 4-5; DiNucci, 1999) firmly in place, could it be denied that users still need to 'make informed judgments [sic] about what you find on-line' (Gilster, 1997: 2)?

The issue facing researchers, teachers, students, and parents is that often these differing technology terms are used interchangeably. Indeed, Chase and Laufenberg have stated an issue with digital literacy is 'its inherent squishiness' (2011: 535). To give an example from various researchers, it has been, or currently is used to mean the following: podcasting, instant messaging, social networking, Web 1.0/2.0, digital storytelling and creating content for distribution (Beers, 2007; Black, 2008; Buckingham, 1993; Coiro, 2003; Gee, 2004, 2007; Jenkins, 2006; Kist, 2007; Lankshear & Knobel, 2006; Lessig, 2005; Leu, et al., 2004; Lewis & Fabos, 2005; Prensky, 2006; Warschauer & Matuchniak, 2010).

The Joint Information Systems Committee (JISC) describes it as 'those capabilities which fit an individual for living, learning and working in a digital society' (JISC, 2011).

Whereas Hague and Williamson give the following definition:

> […] knowing how technology and media affect the ways in which we go about finding things out, communicating with one another, and gaining knowledge and understanding (2009: 5)

Chase and Laufenberg would seem to dislike these definitions too, however, as the messiness remains:

> if digital literacy is simply reading and writing in a digital environment, there is no need for the new terminology. Writing with a pencil and writing with a pen are both writing (Chase & Laufenberg, 2011: 535).

This also echoes an older statement about how technology was becoming simply a replacement for traditional practice:

> The new technologies of the late twentieth and early twenty-first centuries have predominantly (but not exclusively) been used to replicate and reproduce older (pre-digital) practices (Davies & Merchant, 2009: 2).

Perhaps it would be more worthwhile to support Lankshear and Knobel's (2003, 2008) backing of a plural form: digital literacies, which further divides the plural into three components: operational, cultural, and critical. This plurality would seem to suit researchers looking at new practices in the field (Bawden, 2008; Belshaw, 2012; Carrington and Robinson, 2009; Martin & Madigan, 2006; Selfe, 1989).

At this point it occurred to me to invent my own categories, for clarification, on the many forms of digital literacy. These categories would have attempted to group computer users into various skill levels. Upon reading deeper into the literature,

however, it seems unnecessary as there are many established terms in the field already and it would be of much more value to use one of the many existing standards rather than invent another (which in turn would likely be discarded for someone else's in this seemingly never-ending cycle).

For example, Hague and Payton's (2010) Futurelab document contains the following diagram to synthesise the modern understanding of digital literacy:

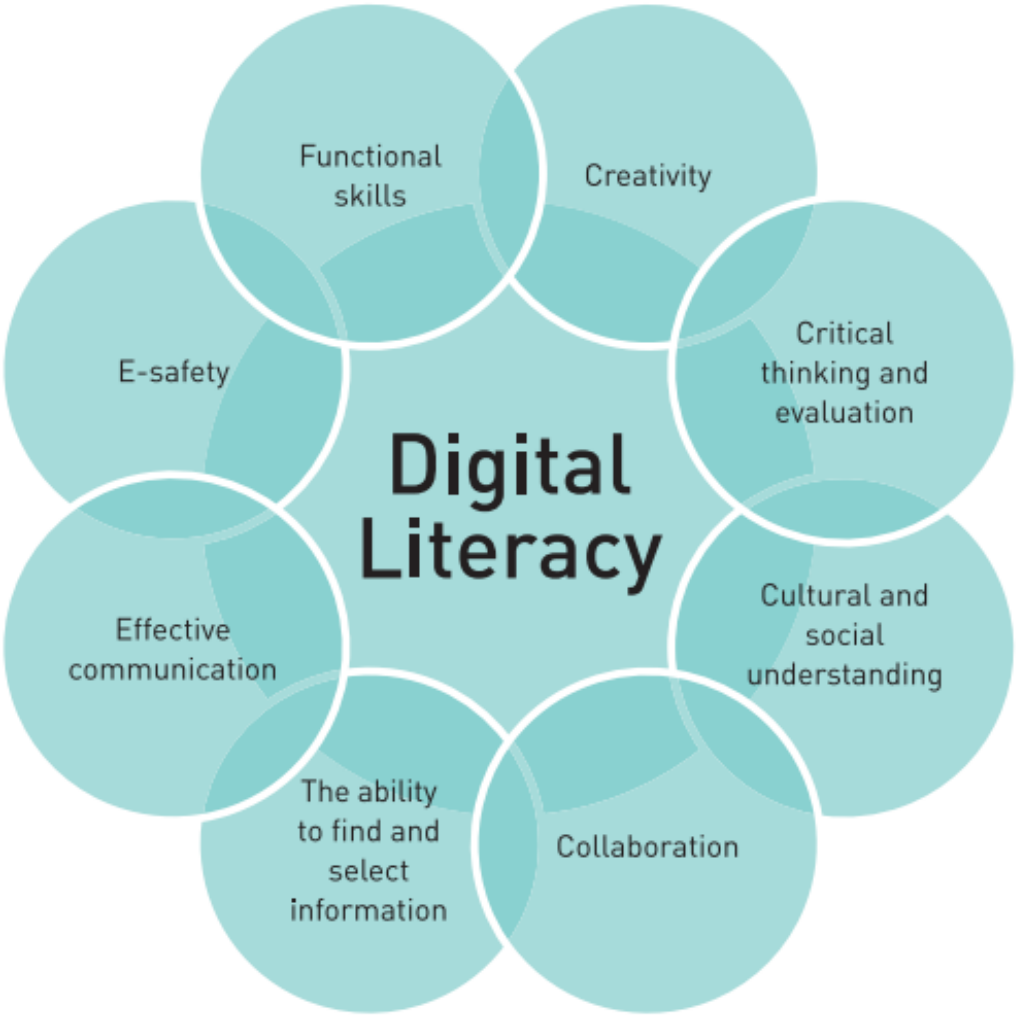

Figure 1 – Diagram of the components of digital literacy, from Hague & Payton (2010).

Because of its straightforward inclusion of the many aspects associated with digital literacy, I have chosen to utilise these components, along with terms established by

the House of Lords' Select Committee on Digital Skills (Great Britain. Select Committee on Digital Skills, 2015) entitled *Make or Break: the UK's Digital Future*. The focus of the House of Lords' document is a 'call to action' (2015: 6) for digital literacy skills to take centre stage in education. The context for this is throughout the entire United Kingdom, and suggests that the respective governments of the UK begin assessment of digital skills. Taken from The UK Forum for Computing Education (UKForCE), the following four skill levels are presented:

> **Digital Muggle**: No digital skills required – digital technology may as well be magic.
>
> **Digital Citizen**: the same work skills as are required to be a full digital citizen. This is the ability to use digital technology purposefully and confidently to communicate, find information and purchase goods/services.
>
> **Digital Worker**: substantially more digital skills than those required for full digital citizenship but less than those of a Digital Maker. This includes, at the higher end, the ability to evaluate, configure, and use complex digital systems. Elementary programming skills such as scripting are often required for these tasks.
>
> **Digital Maker**: skills to actually build digital technology (typically software development). The Digital Maker category is interpreted quite broadly to include, at the low end, for example, workers who regularly create complex Excel macros or data files for controlling 3D printers (UKForCE, 2014).

Presumably, these categories would be used to assess students and teachers inside the education system, if not the general populace. With levels and targets comes the *examination* – a Foucauldian concept that is elaborated on further in Section 3.1. The reader should also take note of the first skill level: Digital *Muggle*. This word, identifiable to 450 million readers of the Harry Potter book series, could be construed as quite the insult. A 'muggle', in its original form, describes a non-magical person from non-magical parents. The idea is that the person will never be able to use magic in their life. Does this apply to digital literacy skills in this form? Can a person be said to never be able to grasp even the most simplistic tasks as described in the

above ‘Digital Citizen’ category? These would include using search engines, online shopping, and other tasks that often replace physically searching for information or objects with the Internet based activities. I do not believe that the term ‘muggle’ is adequate in its original meaning – that of never being able to use technology (and as in Harry Potter (Rowling, 2001), not knowing that it even exists). Perhaps, however, the UKForCE is taking on the Oxford Dictionary meaning:

> A person who is not conversant with a particular activity or skill (OUP, 2015)

If one must use a term from Harry Potter to describe the state of technology usage, better that one than the other options: *mudblood* or *half-blood,* which perhaps would refer to people like myself who had one parent able to use technology and another who did not know much about it. My point here is that if one’s intention is to boost people from non-users to competent users, perhaps it is not the wisest choice to refer to them using a word which in its original usage implies they are incapable of achieving that which you wish them to achieve.

This splitting of users with different abilities has been mentioned by Selwyn in his most critical book on technology:

> [There is an] ever-increasing separation between the minority who design, develop, make and sell ‘new’ technology and the mass of us who end up merely purchasing and using it. (2014: 4)

With this statement, Selwyn appears to downplay the end user’s skill set. There is perhaps some projection of the author onto those with whom he wishes to associate, drawing a distinction between the alleged few who ‘get’ technology and the rest who do not.

As of 2014, this distinction was being more clearly defined as children in English schools are introduced to programming from an early age to distinguish the next generation as developers rather than simply users. The ability to use social media websites and 'like' updates through the click of a button appears not to meet my selected House of Lords' requirements (Great Britain. Select Committee on Digital Skills, 2015) of digital literacy. This contemporary usage of computers in education is discussed below in subsection 1.3.

This introduction to Section 3.1 has shown the issues behind the term digital literacy/literacies and how context and the technology itself influence the definition of these terms. Section 3.1.2 of this chapter shows that, for the last thirty years, while the definition of digital literacy has been forever changing, the one thing that government departments around the world agree on is that 'it is important to the success of our students' (Chase and Laufenberg, 2011: 535). It is my contention that coming to an agreement on what this term means is vital for policy makers and educators before new policies are announced. As will be shown below, historical examples of these misunderstood terms have caused numerous complications for the education system. While Section 3.1.2 illuminates historical issues, Sections 3.1.3 and 3.1.5 concentrate on contemporary debates and teacher and student requirements and opinions.

3.1.1. The Drive for this Research

As mentioned in the Introduction (Chapter 1), it is not my intention to represent technology in education as worthless, nor do I desire to be positioned in an anti-technology camp as certain researchers (Facer, 2001; 2011; Facer et al., 2003; Selwyn, 1999; 2010; 2011a; 2011b; 2014; Selwyn, et al., 2010) appear to have

provocatively shifted firmly towards. The motive during the initial stages of my studies was purely personal. I was interested in why technology was being accepted or rejected and further reading would serve to demonstrate how complex the subject can be. Upon investigation, it would appear that there is a call for such research, particularly from the analytical approach used in this dissertation (Selwyn and Facer, 2014). Therefore, in order to demonstrate the necessity of this research (Wellington et al., 2005: 81), I conducted a critical analysis of the literature, narrow enough to link to the above research questions. The next section discusses historical articles – those from over 20 years ago – with close-up investigation into the policies of the time.

3.1.2. Historical Articles

> […] microcomputers were transported into classrooms in large numbers and at some speed (Beynon, 1993: 8).

Technology usage in schools is not as new as one might expect. Depending on the definition of technology, it could be argued that it has always existed. After all, a quill and ink are still forms of technology. So too is anything that distinguishes us from the base desires of animals, 'content with the simple act of living' (Nye, 2007: 2). Technology, as one researcher states, is 'developed and applied so that we can do things not otherwise possible, or so that we can do them cheaper, faster and easier' (Volti, 1992: 4). But are we using it in this sense? Is the encouraged implementation of technology in education making things faster and easier? Certain technologies can of course fulfil any or all of those criteria. The printing press made it easier to distribute books; it was a lot faster than manually writing each new copy and cut

down on the costs required to pay for a person with superior penmanship. There is no doubt that technology itself has been beneficial to the world – this goes without saying.

Even limiting the definition of digital literacy to computer usage (Selwyn, 2011b), rather than other skills such as critically evaluating programs, cultural and social usage, collaboration and creativity, requires setting a hard limit on exactly when one should begin the research. I chose 1988 as my earliest major focus as this is the same year that the National Curriculum was introduced, not the same year that computers were. This span of just under 30 years could allow for several dissertation's worth of writing. Consequently, and as mentioned above, certain information will be focused on in more detail as it pertains more to the topic at hand.

Historically, it appears there has been a cause for concern since at least the mid-1970s with how policy and practice intertwined. Problems established during the initial technology initiatives for schools dating back to the 1980s with the Microelectronics in Education Programme (see Chapter 5) through to the National Grid for Learning beginning in 1998-2002 (Somekh, 2000: 21) stemmed from ignoring previous research (House, 1974; MacDonald, 1989). Somekh describes how 'the over-emphasis on hardware at the expense of teacher training' (2000: 22) was entirely expected to result in wasted opportunities and reduced efficiency of technology, echoing Selwyn's (1999) similar statement a year prior. Norris et al. (1990) also allude to the idea that the Government would recruit less experienced researchers who undertook 'impossible tasks' because more experienced researchers were realistic about the time required for the project to be implemented. As Somekh reiterates:

> Key personnel were blamed for failing to deliver over-ambitious or ill-conceived policies and new, less experienced people were brought in because they were prepared to offer more than could actually be achieved (2000: 23).

In addition to these failures, certain government departments, such as the Department for Education and Science, and the Department for Trade and Industry, refused any evaluating studies of new technology initiatives (MacDonald, 1992; Somekh, 2000: 23). Though this was seemingly rectified during the 1990s which saw more involvement from researchers (NCET, 1994; Underwood, et al., 1994; Watson, 1993). In 1998, the National Council for Educational Technology (NCET) was restructured into the British Education and Communications Technology Agency (BECTA), which continued until it was dissolved in 2011 due to budget cutbacks in the May 2010 post-election spending review.

Lest it be assumed that the UK was the only country with these issues, Cuban (1986) detailed the mismanagement and non-use of technologies in the United States all the way back to the 1920s, with Selwyn (2011b) conducting a more recent summation of the usage of film, radio, and television (2011b: 45-52). While this is out of the scope of my study, it seems that the passion of merging newer technologies and education has been a staple of researchers, policy makers, and educators for almost a century – with mixed results. Gilster, usually attributed with originally coining of the term 'digital literacy' makes a distinction between these older forms of technology and the Internet:

> Where the Internet model diverges is that it places greater responsibility in the hands of the individual. Rather than being spectators – information consumers – we become Internet users, people who discover and evaluate content before deciding how to put it to work (Gilster, 1997: ix).

One of the most common tropes of technology usage in classrooms, being that the latest technology offers learner-centred approaches rather than being teacher-dominated, dates back well over 40 years too. Most teachers have likely at least heard of, if not spoken about it, on many occasions:

> […] with computer assisted instruction the process is pupil-centred, not instructor-centred and the machine adapts its pace to that of the student. The dull students can ask for endless repetition without embarrassment and the machine will retrace its steps with infinite patience. The quick student or the student who already partially knows the material can skip a segment – with the machine questioning him to check that he does, in fact, know it (Martin and Norman, 1970: 127).

Selwyn (2011b: 55) takes a more critical stance to the above argument by reminding the reader of the repetition, over 20 years, of positive claims cementing the usefulness of technology into general discourse (Foucault, 1994; 128). I would deem this attitude a little premature, for the ability to correctly achieve what is described by Martin and Norman (1970) would not be available until at least the mid-2000s. In Chapter 6: *Suggestions for the Future*, I describe the upcoming avenues of educational technology, including ambitious next-generation software and perhaps vapourware[2], which is set to hit the classrooms.

In this section I have highlighted some important historical events pertaining to digital literacy in education. The next section, 2.2.1, deals with historical concerns in England that researchers had and how these may or may not have been addressed. In certain circumstances, I provide an international perspective to demonstrate the similarities or differences between England and relevant, similar digital objectives.

[2] This is software or hardware that has been advertised but may not yet exist, or may never exist due to being stuck in the concept stage of development.

3.1.2.1. Historical Concerns

> *Fundamentally, a succession of educational IT initiatives has forced computers on to schools in a haphazard and ill-considered manner, with little thought given to the practicalities of classroom use* (Selwyn, 1999: 80).

In the previous section, historical articles were introduced demonstrating the introduction of digital literacy in education and schools. This section is dedicated to the historical concerns highlighted during this era by researchers and is used to draw attention to more contemporary issues which may mirror the problems of the past. The quotation above from Selwyn (1999: 80) refers to the initial extensive push for hardware in schools without useful software and the disregarding of research into educational technology before funds were allocated. This has since been remedied for the most part, though more recent policy initiatives (Chapter 5) have indicated a slip back into this hardware focus. In order to get there, however, historical concerns relating to business interests, treatment of teachers, and actual usage of computers in schools must be discussed.

The first concern to highlight which seems to have been quite prevalent is the apparent intrusion of business interests into policy making dating back to the mid-1980s and continuing, likely, to this day. The Microelectronics Education Programme and Microelectronics Education Support Unit, two successive programmes from before the National Curriculum was launched, were known for 'keeping up with the inevitability of IT in other sectors of society' (Selwyn, 1999). Indeed even after the introduction of the National Curriculum in 1988 (Great Britain, 1988), researchers were suggesting (Beynon and Mackay, 1989) that computing policies were being used to, whether on purpose or not, promote computer suppliers and boost an industry which the government had identified as necessary for the future. Though

this could be seen as a negative by some researchers, as private businesses could, and often do, have their own agendas, other researchers a decade later had a more positive outlook on the success of government to attract business interests (BECTA, 1998; Scrimshaw, 1997; Somekh, 2000) with the National Grid for Learning (Great Britain. Department for Education and Employment 1997). If the objective of policy makers was to boost educational standards and at the same time offer relief to the fledgling industry of British computing, it could be seen as a success for both, but more towards the latter because manufacturers care not for what the products are used as long as the consumer continues buying them. As IT was 'rapidly integrating into the business and home environment' (Selwyn, 1999), particularly during the late 80s and early 90s, it is easy to see how those currently working in such businesses would desire their children have access to it at schools. Returning to a personal note, as mentioned in the Introduction section, this is precisely why my parents purchased a computer for me to use around age 3.

The second concern, and one that continues to this day, is the treatment of teachers and students who offer resistance to this integration of technology in schools. As Foucault identified (Foucault, 1979: 215-216), classifying everything allows one to 'control/prescribe/punish/reward every action of every person' (Jardine, 2010: 57). More on the techniques used to discipline is addressed in the Findings (Chapter 5), with definitions to Foucauldian terminology located in Section 4 below. To continue with this concern, Wild (1996) and Brosnan (1997) both commented on this characterisation of teachers as 'hostile' (Selwyn, 1999) towards or unconfident (ibid.) in using IT in the classroom. The former claim, I suggest in the Findings section (Chapter 5), is part of the normalising tactics (Foucault, 1990a) used to influence teachers into a standardised norm; whereas the latter view of apprehension about

using technology is felt by some teachers who believe in a digital divide that exists between generations (Selwyn, 2011a: 92).

The third, and final concern for this section was the uptake, or lack of use of computers in the classroom. Suppes, almost five decades ago identified that the computer would be beneficial and immediate in its effect on education (Suppes, 1966). Papert (1980) mirrored this 14 years later with the following prediction:

> [we are heading towards] a future where the computer will be a significant part of every child's life (p. 18)

And finally, Selwyn (1999), 19 years after this, describes how there was little usage of computers in schools despite all the articles prior to his stating that the computer would revolutionise education as we know it:

> […] the entire educational system will begin to revolve increasingly around the computer. Combined with teachers and parents, books and classrooms, the system over the next few decades will change. At the core of it will be the computer (Stonier and Conlin, 1985: 10).

It was perhaps not as quick as the previous authors would have hoped, but eventually the computer did become a large part of schooling – though not the revolutionary tool some would have liked it to be (Selwyn, 2013: 156).

In this section I have detailed some historical concerns that educators and researchers had regarding education and technology. Some of these, such as the usage of computers in classrooms, are still relevant today, and are discussed in more detail during the *Findings* (Chapter 5).

3.1.2.2. Government Criticisms

It is necessary to include a small background section on the criticisms of Government actions, though the majority of this section is placed in Chapter 5 – *Findings* due to its link to policies throughout the years. This section is to help frame the setting of policy decisions in England and what else was happening when certain policies were put into place. To do this, I use Chitty and Dunford's (1999) extensive book on the subject of State Schools, which I revisit in more detail during Chapter 5; Gillard's (2011) broad document which describes in detail policy decisions in England, though this section utilises only the chapters pertaining to 1988 and onwards; and two articles (Facer et al, 2001; Mee, 2007) in order to keep the centre attention firmly on digital literacy.

The starting point of this study is 1988 with the introduction of the National Curriculum in The Education Reform Act introduced in July 1988 (Gillard, 2011). Introduced initially to standardise content and enable assessment of students, Chitty and Dunford describe that the 'meretricious agenda' (1999: 25) of the Act was to reattempt to introduce selection into schools, which the Conservative Government failed to implement in 1979 (Gillard, 2011). Specifically, the Government was using 'devices like opting out, open admission, city technology colleges, and the introduction of 'local markets'' (Chitty, 1999: 25) to push for selection 'by the back door' (ibid.). Perhaps as an initial setup, or continuation to the lack of teacher input on digital literacy, the National Curriculum (NC) was created with 'virtually no say in its design or its construction' (Gillard, 2011) from teachers and 'its introduction resulted in a significant drop in reading standards' (Gillard, 2011). Yet it also resulted in Right-wing think-tanks (ibid.) campaigning for the 'simplification' and 'Anglicisation' (Jones, 2003: 141) of testing, though this was met with resistance from educators,

boycotting of the SATs through 1993-1994, and eventually resulted in the redesign of the NC in 1995 (Gillard, 2011; Jones, 2003: 141).

Already beginning in 1996, researchers were pushing for the importance of knowing how to use computers correctly, along with knowing 'computer literacy' (Goodson and Mangan, 1996) which fed into the New Labour government's '£1 billion 'National Grid for Learning initiative'' (NGfL) (Facer et al., 2001). The NGfL was introduced as 'a way of finding and using on-line learning and teaching materials' (Great Britain. Department for Education and Employment 1997: 3), boasting amongst other things, that it:

> […] will provide a national focus and agenda for harnessing new technologies to raise educational standards, and improve quality of life and Britain's international competitiveness, especially the new literacy and numeracy targets (ibid.).

Though the Government at this time has been criticised, as mentioned in Chapter 1, for pushing parents into the arms of private industries looking to capitalise on the desire for children to have the latest tools (Haddon, 1992; Facer et al., 2001: 200; Nixon, 1998). The Minister of Industry during this period has been noted for saying:

> Our children are already moving into the digital future. They are quickly mastering the tools that they will need for the new century. Some of us need to catch up (Battle, 1997).

Again, this is the rhetoric that fed into articles like Prensky's (2001) and divides those who allegedly were raised digitally, and those who were not, simply by the former having grown up when the technology was created (Facer et al., 2001: 201).

Indeed, there appeared to be little confidence from the Government's own researchers:

> Decision taking on funding and equipment in schools within the UK education system is highly decentralized and even if Central Government were minded to hypothecate dedicated resources to ICT, the reality is that the scope for any government of any political persuasion to do this is limited (Stevenson, 1997).

Although this did not seem to dissuade the Labour Government, Mee (2007) notes how they pushed forward with the programmes 'aimed to creatively use the purchasing power of central government as a lever for economic expansion of the private e-learning sector' (p.64). Again it would seem that no matter which political party was in power, the propping up of private businesses was one of the core priorities, at least when it came to technology in education. Although there is nothing inherently wrong with boosting British industry and updating the education system in theory, within the document '*Connecting the Learning Society'* (Great Britain. Department for Education and Employment 1997) the emphasis was noticeably on stimulating 'the growth of the UK e-learning market' (Mee, 2007: 65).

Even before Labour's victory in 1997, McNeil (1991) stated that the Conservative's education policy following on from the 1997 *Micros in Schools* and *Microelectronics in Education* initiatives had forced education policy to 'carry the burden for Britain's place in the international IT race' (p. 133). Selwyn also commented that the focus of the Conservatives was on hardware, with the Labour party shifting to both hardware and software (Selwyn, 2007: 223-224).

In this subsection I have offered a brief background on the situation leading up to and extending beyond the beginning of this study, the introduction of the National Curriculum. As mentioned in the introductory paragraph, the main details of this are included in Chapter 5 – *Findings*. In the next subsection, I elaborate on the concept

of a divide between ‘Digital Natives’ and ‘Digital Immigrants’ (Prensky, 2001a), before moving onto contemporary digital literacy practices and definitions.

3.1.3. Digital Natives, Digital Immigrants – A Close-up Analysis

A review of digital literacy can hardly be considered complete without addressing one of the most controversial claims on the topic. That is, of course, the hypothesis stated by Prensky (2001a, 2001b) that there is a notable difference between the youngest generations, those he refers to as ‘Digital Natives’ (2001a: 1) and the ones who grew up before ‘new technology’ (ibid.) was common-place – by which he is referring to ‘computers, videogames, digital music players, video cams, cell phones, and all the other toys of the digital age’ (ibid.). I stated in the *Introduction* (Chapter 1) and will return to in the *Findings* (Chapter 5) that I fall squarely into the Digital Native category, if we are to use these labels. Prensky positions himself as being a Digital Immigrant (2001a: 3) complete with the ‘accent’ (ibid.) that most immigrants retain when learning a new language and culture. This is such a major issue, Prensky contends, that:

> […] the single biggest problem facing education today is that our Digital Immigrant instructors, who speak an outdated language (that of the pre-digital age), are struggling to teach a population that speaks an entirely different language (2001a: 3).

I compare this with other researchers’ opinions in the next paragraphs, but as a so-called Digital Native, I feel that my “nation’s” abilities are vastly overestimated by these self-proclaimed ‘newcomers’, not to mention there being some negative generalisations that do not apply. In part I agree that schools need to adapt to the

changing world (2001a: 4-5) and this thesis is on the investigation of that very topic, but when reading that I, and my peers, allegedly have 'little patience for lectures' (ibid.: 4) or cannot understand step-by-step logic, I find myself resisting the position of the text. To use Foucauldian language here, Prensky is, in my opinion, falling into a fallacy of universalising dissolution (Foucault, 1980: 136-137) That is, overgeneralising negative instances of specific individuals and creating a category which is easy to attack (Jardine, 2010: 31).

When Prensky wrote this article, in 2001, fewer people had broadband Internet connections, thus limiting the immense speed of information transfer he claimed was affecting this generational shift. There is no doubt that in recent years (by this I mean approximately within the last 5 years due to the rapidly changing technological landscape), socialisation and literacy practices have been influenced by the Internet and social media websites (Gibbons, 2007; Davies, 2012, 2013, 2014), but this applies not just to younger people, but to all people. Even seven years after Prensky published his two articles on this topic, there was 'little evidence' (Bennet et al., 2008; Helsper & Eynon, 2010: 504) suggesting that the newest generations used and processed information in ways different enough to justify these separating labels. This becomes an issue when studies from outside the UK, for example, in Prensky's native USA, are applied to a British context (Helsper & Eyenon, 2010: 505), particularly if British organisations are conducting research with these purported differences in mind (ibid.: 517).

In international research, multiple studies (Bennett & Maton, 2010; Jones, Ramanau, Cross & Healing, 2010; Kennedy, Judd, Churchwood, Gray, & Kraus, 2008; Ng, 2012) have shown that while 'Digital Native' students have unparalleled access to technology, very few if any are involved in the active creation of newer web-based

content such as websites and wikis. Ng suggests that, in Australia at least, there is a 'lack of purpose to do so' (Ng, 2012: 1077) meaning that beyond the standard social media usage these students are not engaged by schools in a useful way to activate the 'native' skills they are claimed to have by Prensky. Ng also concludes that:

> Unless taught explicitly to use other (educational) technologies, it is unlikely that Digital Natives would think about educational technologies or consider tinkering around creating a website or wiki unless for a purpose, for example to advertise a product or for a graded academic assignment (Ng, 2012: 1077).

A study in Israel (Kolikant, 2010) which asked students from 'post-preliminary schools' found that a majority of the students actually described themselves as having less ability to learn than the 'pre-ICT generation' (p.1390), deeming their usage of the internet to actually be a hindrance to studying, and that books 'despite of, or perhaps because of their lack of user friendliness, were perceived as empowering' (ibid.). This directly contradicts Prensky's opinions from his original article (2001a) which stated that students from the Net Generation are incompatible with traditional methods. Indeed, it would seem to give credence to Helsper & Eyenon's (2010) statement that generalisations in one nation may not be applicable to another. Certainly, when one factors in the 80 million Millennials in the United States alone, not to mention the rest of the world, describing all of them as being superior in digital skills may be hard to evidence. In Prensky's defence, he did release a caveat three years later:

> This is not to say that every young person does every one of these things online – many still do only a few – but the possibilities for what Digital Natives can do online are growing exponentially, and are being adapted by more and more of them daily (and by some adults as well, although as we will see, there are differences.) (Prensky, 2004: 1)

Here Prensky seems to have moderated his categorisations from the original article, moving back into a position of less assuredness of how much Digital Natives can do. The focus now is on the *possibilities* of the Digital Native which, I contend, is not limited to one generation, but open to anyone who has both the time and the resources for study.

3.1.4. Contemporary Digital Literacy Practices and Definitions

In the previous sections, I have introduced the concept of digital literacy, along with why this research is needed, I have also highlighted key historical policy implementations, concerns, and issues since 1988. This section brings contemporary digital literacy practices into focus. Here 'contemporary' is broadly defined as policy written within the last 15 years, although it may be necessary, with the continuing advancement of technology, as we move through 2016 that an even narrower definition is applied. For example, the Findings (Chapter 5) splits "2000-2010" and "2010 – Present" into two separate sections. This latter time period could be classed as drastically different in the manner of technology available to the 10 years before it. As digital technology usage increased enormously after the widespread availability of high-speed broadband in the early 2000s, so too did the increased amount of research into using technology in schools. A recurring theme, which is demonstrated below, is one of focusing on how to prepare for the future, particularly through studies pushing for an explanation as to why, as highlighted previously, technology in schools had not yet caught up with the technology one uses in the real world. These studies tend to emphasise, as with the past, the lack of teacher training in these alleged needed areas, age-related issues when integrating

technology in education (with studies such as Prensky (2001) making a distinction between those adopting technology and those born into it) and more of a focus on student and instructor opinions. In this era, it was not an inaccuracy to suggest that 'the digital' would enthral and take over almost every facet of life as computational devices such as smartphones, tablets, laptops, desktops are a staple in most people's daily routine – along with the software and websites that connect us (Selwyn and Facer, 2014). It would be foolish today to say that one should prepare children for a life without technology, for that is a world in which they will never live. The argument, has of course, been present since before the explosion of digital device usage:

> This is a serious business – preparing our young people for the business of tomorrow (Blunkett in McGavin, 1997).

Keeping with the long shot, medium shot and close up (Wellington et al., 2005) theme, an apt framing of contemporary narratives can be seen in Jones-Kavalier and Flannigan's (2008) article, which comes from a United States perspective but matches the common thoughts of pro-technology researchers, Prensky for example, around the world. From the beginning the authors categorise previous generations (Generation X and possibly Y) as having difficulty with how the world has moved on:

> For generations of adults who grew up in a world of books, traveling through cyberspace seems as treacherous and intimidating as speaking a new language (Jones-Kavalier and Flannigan, 2008: 13).

It could be said that many people find it difficult to 'use' a computer. Depending on the requirements, users may even comment that they find technology hard to understand. But this framing of earlier generations as often digitally lacking, with some researchers stating that it is assumed 'common knowledge' (Salajan,

Schönwetter, & Cleghorn, 2010: 1393), continues to this day as one of the major problems with implementation of technology into schools. It stems, once again, from articles such as Prensky's (2001a) which uses divisive language to explain failures in government policy:

> […] non-IT-literate individuals [are] burdened with an accent – non-native speakers of a language, struggling to survive in a strange new world (Jones-Kavalier and Flannigan, 2008: 13).

Indeed, a common response to why we are not exploiting all there is to offer on the Internet in schools, and one that can be seen throughout the subsequent research presented here, is that classrooms are 'filled with digitally literate students being led by linear-thinking, technologically stymied instructors' (ibid.) and this, those who divide by age and assumed skill set, is a problem which must be solved. Returning to England, we find that five years prior to the previous article being written, an instructional article of sorts was designed for early-years practitioners (Brooker, 2003). Capitalising on Mumtaz (2000)'s older article on the familiar topic of teachers lacking expertise in understanding how hardware and software could be used for their respective age groups, Brooker (2003) listed several 'unwelcome outcomes' (p. 261). This article is important for the discussion of policy throughout the late 1990s and early 2000s, and is included in the Findings section in greater detail. For now, however, I shall keep in a 'medium shot' stance as an explanation of how government initiatives focusing on technology integration and training for teachers was a major focus twelve years ago and that it was concluded that without practice of learned skills, 'the training appears to have little lasting impact on classroom practice' (Brooker, 2003: 266). Additionally, Brooker echoes a familiar concern to the earlier historical claim that:

> The rapid growth in curriculum requirements, and in hardware, has not always been matched by a growth in practitioners' understanding of appropriate ways to use new technologies (2003: 261).

This appears to have been a worldwide issue of sorts as, at roughly the same time, Grabill and Hicks (2005) called for a greater implementation of the existing available technology in the United States, possibly in an effort to continue on from the Federal Government's programmes which bypassed local policy in order to place computer hardware and additional technology infrastructure into the school system (Selwyn & Brown, 2000). More recently, Hicks and Turner (2013) commented on the state of technology in education again in an article persuasively subtitled '*Digital Literacy Can't Wait*' and included examples of how to properly incorporate digital literacy skills in schools as a response to their lack of utilisation:

> Despite the prevalence of computers, few teachers report that they are incorporating Google Apps or other digital tools into writing instruction on a systematic basis (Hicks and Turner, 2013: 58-99).

In an interesting mirror image to the call for this in the UK, the authors recommend swift adoption of technology in schools throughout the USA:

> We know that the nature of literacy has changed in the digital age, but unfortunately, we do not have decades to catch up to this change. In other words, we cannot take three decades to put down the metaphorical "red pen" as it relates to digital literacy instruction (Hicks & Turner, 2013: 59).

The authors in this context are using hyperbole to demonstrate that time is of the essence when it comes to implementing educational change. This mode of persuasion – the pathos technique in rhetoric – is present in the English context too with the aforementioned House of Lords document (Great Britain. Select Committee on Digital Skills, 2015) playing on the reader's emotions to push an agenda.

Although they also note how difficult it is, even in 2013, for poor families to access the same technology as those from richer districts: ‘Most families [at a poorer school] access the Internet through the public library, which has a computer lab and an after-school program’ (Hicks & Turner, 2013: 59). Certain articles from England illustrate this shared funding problem, such as Mee’s (2007: 64) paper on e-learning funding for schools, which alludes, as with the aforementioned Selwyn (1999) article, to the government supporting ICT in an effort to boost the private sector and creating ‘a large capital infrastructure, which schools are required to support with their own funds’ (Mee, 2007: 63).

I mentioned above that I am not anti-technology as researchers like Selwyn (2014) appear to be in his more recent book, which he prefaces with a depressing pre-emptive sentence: ‘[…] this is not a particularly hopeful or optimistic book’ (p. vii). In Chapter 1 – *Introduction*, I constructed my value statement and specified that in the field of computing, security is my number one concern. The importance of properly secured software and hardware, allowing for freedom and privacy is why the questions identified by my readings on Foucault are used in Chapter 5 – *Findings*. Matters relating to this fit under my second and third research question, which can be found in Chapter 2 – *Research Questions*. Selwyn’s distrust seems to align more with a cynicism towards the benefits of the digital, a lack of faith that shields him from the ‘blind spot for the politics of educational technology’ (Selwyn, 2014: 3) rather than my own suspicion of the management of and code behind popular proprietary closed-software. To be fair to Selwyn, he states his position upfront (ibid.) in the same book. He also tactically addresses ‘open’ technology in education with more than adequate background information regarding free operating systems and software packages such as GNU and Linux (Selwyn, 2014: 65-66). His inclusion of

the benefits of open-source software is welcome, and acknowledgement of the removal of ‘unfreedoms’ by Atkins, Brown and Hammond (2007: 1) comes close to my concerns, although the focus once again returns to the effectiveness of technology, a sort of nirvana fallacy where it must be perfect, instead of just better than what we have currently.

Indeed, a major criticism of Selwyn’s is to state that only individuals with the technical know-how to code would actually be able to alter ‘open’ applications (Selwyn, 2014: 77) – though this seems to be more of an initial failure of schooling in general in that the successive governments of the UK have not prepared any generation in the last 50 years to make programs without taking a Computer Science degree. Is this enough to dismiss the benefits of collaboration on open technologies? Certain researchers (Bergquist and Ljungberg, 2001: 315; Ducheneaut, 2005; Meng and Wu, 2013: 128) have noted the hierarchies and conflicts which can arise from open source communities, and these often-unwritten power relations (Mansell, 2004), through which the users have established rankings for each other, should be noted, understood, but not used as an outright dismissal of the benefits of an open project. After all, seniority, preferences for certain aspects, and forming groups are all part of human nature, not exclusive to computer programming. Additionally, one should be reminded about what the alternative is – closed software, with absolutely no way to examine, by reading the code, what harm it can cause, whether one is a professional or novice. In keeping with his condemning theme, Selwyn concludes that proponents of open-based technology are basing it ‘upon a variety of political, social and cultural agendas centred on a desire to re-orientate educational institutions and systems and the power therein’ (Selwyn, 2014: 83) rather than for ‘educational fit or effectiveness’ (pp.82-83). Selwyn is accurate in that proponents of

a radically different culture of programming would have agendas opposing the status-quo – closed, limiting standards – but his focus on the negatives of open community collaboration (p.83) seems slightly over the top given that there are entire operating systems, alternative applications, even open hardware which allows multiple companies to compete in the market place (for example, computer component manufacturers) which are designed by collaborative teams using the Internet. I argue that these could all be established characteristics of the critical component of digital literacy. To 'fight back' as it were against that which is deemed oppressive requires foremost a critical understanding of technology and the harm it can cause. In this case, I return to my previous statement in Section 1 regarding what it really means to be digitally literate. Selwyn (2014) touched on how those with technical skills are at an advantage over those without them, and I agree. It matters not if the program you are using is closed or open when you cannot literally read the code, or metaphorically read into technological discourse in the first place. Much as a person who is unable to read could not decode the writing in a contract they are signing, without the knowledge true digital literacy brings, the power to change anything remains outside of your grasp.

In this section I have critiqued some contemporary issues regarding digital literacy while linking to the relevant research questions. In the next section, student and teacher requirements and opinions are analysed with the digital divide given a close-up.

3.1.5. Student and Teacher Requirements and Opinions

In previous sections I have explained historical and contemporary usage of digital literacy, along with the various concerns that were highlighted up to this point relating

to the implementation of IT in schools. One further component of the literature is the analysis of both student and teacher opinions and how they fit into the history of digital education. As with the above sections, I provide a worldwide view with a focus on the English school system.

To begin, it is important to establish one of the most popular issues in education regarding computer literacy, and that is the case of the so-called digital divide (Wilhelm, Carmen and Reynolds, 2002). Roughly describing a gap between two or more groups of people, the digital divide has been identified worldwide along racial lines (Mossberger, Tolbert, and Gilbert, 2006); economic status (Wang, 2002); socioeconomically (Hillbert, 2010; Guillen and Suárez, 2005; Wilson, 2004, Wilson, Wallin, and Reiser, 2003), generationally (Prensky, 2001a, 2001b) and culturally (Carr, 2007) just to name a few. Though in recent years the digital divide, being linked to inequalities, is lessening as more people get physical access to electronic devices, some researchers have identified a further separation – described by Graham (2011) as the 'knowledge divide'. This would form the basis of inequality in many parts of the world as without knowledge of how to offer support, or even how to establish computer-based systems, certain poorer communities may always fall into the 'have-not' side of the divide (Burnett, et al, 2014: 11). This term has its critics however, particularly in the case of Eubanks's (2011) study on women in the YWCA which identified that the existing idea of 'haves' vs 'have nots', as is usually the dividing line between people in this field, is prevalent because the system is designed in this way. In other words, those who have the knowledge, keep the power that comes with it (Foucault, 1979: 170-171, 187).

With this established, it is not simply a matter of the so-called 'developed' countries being the 'haves' and the developing countries being the 'have nots'. This divide,

whether known as digital or knowledge based, exists in the supposedly richest countries of the developed world. In the United States, student information and communication literacy differs greatly, depending on, as touched on above, socioeconomic status, ethnicity, and gender:

> […] poor and minority families in the United States are less likely to have access to a computer and broadband Internet connection at home and less likely to have the necessary skills and knowledge to meaningfully use these resources (Attewell, 2001; Hesseldahl, 2008).

The Pew Research Center states that: 'Adults from households earning less than $30,000 (approximately £21,000) a year are roughly eight times more likely than the most affluent adults to not use the internet' (Pew Research Center, 2015) though this is shrinking year after year.

Figures throughout the entire United Kingdom show that those over 75 are less likely to use computers or the Internet on any device (Ofcom, 2015: 192) with younger internet users having 'a broader weekly internet use' (Ofcom 2015: 65). Additionally, just over half of users declared themselves as 'confident' as an Internet user (ibid.: 148) with 16-24 year olds being the most confident at 74% (ibid.)

While it may seem obvious that people of less well-off means have reduced access to expensive items and fewer opportunities to utilise such items where available through shared spaces like libraries, one must not forget that many governments employ a one-size fits all policy for state-schools. It is common, for instance, for poorer schools to have a far higher ratio of students to computers and for students from richer backgrounds and neighbourhoods to have the opposite, a larger amount of available technology (Parsad and Jones, 2005: 8). It would be safe to assume that

parents and children who live in economically impoverished districts, where schools are unable to provide technology to the standard set by richer districts, would also not be able to afford to own cutting edge computers at home – or anything more for that matter than perhaps a shared family machine. Returning to the main focus, schools in the UK, Selwyn (1997) identified almost 20 years ago that while students who use a computer at home did not tend to use IT in schools any more than those who did not have a computer at home (p. 80), it did help in other ways, particularly towards the attitudes students have while using computers:

> These attitudes, especially anxiety and perceptions of the usefulness of computers, have been shown to be primary factors in influencing individuals to continue to use IT (Igbaria and Chaskrabart, 1990; Igbaria, Schiffman, and Wieckowski., 1994).

Selwyn's conclusion in the late 90s was that students who used computers more at home were more likely to continue using them after their school life was over (Selwyn, 1997: 81). This study was conducted before the widespread adoption of broadband, smart phones, and the increasing requirement for technology in our daily lives. If students today are unable to access a computer at home, and with poorer districts unable to provide enough of the required access, how is this affecting their future almost certainly technology-embedded careers?

On the question of whether access to technology is beneficial, or lack of access a hindrance, Bulger, Mayer, and Metzger's (2014) study may have the answer. By examining the determinants of digital literacy proficiency of 150 higher education students, Bulger et al. came to the following conclusions:

> […] academic knowledge was the best predictor of digital literacy proficiency, although technical knowledge also contributed additional predictive power (2014: 1581).

This suggests that students' lack of access to technology has an overall negligible effect on their ability to become digitally literate. Indeed, the results presented in the study worked against 'technology-centred' (ibid: 1569) views, preferring traditional academic instruction as a means to become digitally literate (p. 1581-1582). Bulger et al also conclude that:

> […] just knowing how to search the Internet does not ensure digital literacy. Students in the digital age still need classic scholarship skills, particularly how to select and integrate information from multiple sources. The inclusion of digital literacy in the academic curriculum does not mean that classic scholarship skills are no longer needed (p. 1582).

This is an interesting statement as it appears to be directly addressing calls for modifications in instruction such as those presented by Prensky (2001) and directly contradicts his claims that students from the younger generations cannot operate in the same way as students from the older generations. Prensky's articles (2001a, 2001b), however, were written 15 years ago and the world of technology has changed vastly since then. This statement also removes the requirement for teachers to adapt to new methods of teaching using digital tools rather than traditional approaches as while those with technical knowledge may have a slight head start on that portion of the knowledge, the groups studied 'did not differ significantly (p. 1580) on their usage of the technology.

3.1.5.1. Student opinions

So what of the people who are often cited to have been 'born digital' (Palfery and Gasser, 2008)? Those who are apparently simply experiencing (Nasah et al., 2010) what the older generations had to learn, what do they think about this? The first dispute one immediately discovers is trying to understand which generation we are

talking about. Is it Generation Y – the Millennials – who were born from the mid-eighties until roughly 1997, and to which I belong, or is it Generation Z who were born close to and after the year 2000? The former, as those from my generation can attest, grew up and went to school before smart phones were popularised and some of us before broadband was available. These would be Prensky's (2001) 'Digital Natives', a concept he later revised, granted, but nevertheless were not really born into it themselves. No, it is the latter, Generation Z, who are the clear 'Digital Natives' (Spector and Merrill, 2008: 124), if such a term were to be used. To elaborate further on this native concept, Prensky's concept of natives vs immigrants placed students who were already in schools against their teachers to explain why differences in learning styles were apparent. That younger generation (the Millennials), however, grew up at least partially before broadband was mainstream in Western countries and entirely before the rise of smart phone technology.

Worldwide, opinions have been taken from older and younger students regarding how they feel about using technology in education. For this section I once again use a worldwide approach with close-up focus on England in order to situate the current circumstances of the English context.

In a 2011 study, Selwyn (2011) analysed international distance learners who were enrolled at a University in the UK to assess their use or non-use of technology. The results, as expected were varied, with some utilising the Internet to look up more information about their course that the textbook does not supply (p. 90), and others declaring that they '[Googled their] way through their degree' (ibid.). Gilbert's (2010) book comes to mind, which deals with the issue of keeping students motivated in the 21st century using the tongue-in-cheek query: *Why Do I Need a Teacher When I've got Google?*

Another student from Selwyn's study claimed that the online bulletin boards are empty because no one is required to go there (Selwyn, 2011: 90.), though this was not always the case when teaching staff were actually engaging positively with students using the available technology (p.91). Indeed, a major motivator for students of all ages and from all generations is that the teacher is engaging in the activities. Perhaps this could be considered as an 'I told you so' statistic for those pushing for more teacher training. However, some students in this study also claimed to gain no value from the online discussion forums with one student divulging that possibly 'there's 10 percent of people that use' the resources with himself being in the '20 percent […] who just flick through them and get some value from it' with the remaining '70 percent' who find it worthless (Selwyn, 2011a: 91). An explanation for this, Selwyn notes, refers to the global division issues mentioned previously (ibid.) with one 45-year-old student mentioning the Digital Native/immigrant split: '[…] we are from an era who are not really into the technology' (Selwyn, 2011a: 92). I find this interesting because this student would have grown up in the late 60s and 70s. It is likely the student meant something specific by 'the technology' and it is not as if their entire life would have been void of general technological advancements. The most probable explanation is that the student is projecting their lack of motivation onto the rest of their generation, a lot of whom are actually 'into' technology as they laid the foundation for the generations to come. The responsibility for this frame of mind is by no means on this one student, as they may have been influenced in some ways by the thinking that correlated the studies of certain researchers (Oblinger & Oblinger, 2005; Prensky, 2001a; Prensky 2001b; Palfrey & Gasser, 2008). That is, anyone born before the 1980s will never fully 'get' the latest technology.

In general, it appears that during this study, the use of technology was deemed as a negative aspect, or quite often a waste of time, mirroring other studies of this nature (Raddon, 2006). Though it should be noted that, once again, this is not from the generation who were born into a digital world, but the previous generation who grew up without it.

Finally, returning fully to an English focus, Davies (2011) conducted a study into how young people respond to views about the use of technology when learning at home. This specific article also contains necessary information on British policy in schools, and as such is used in the Findings section. For this section, however, it is important to examine the feedback given by some students who fall into the Generation Z, or digitally raised generation, to see what they think of its usage. Also included in this article are the much needed reactions from the parents of these students, and their opinions on how the Internet has caused a loss of control for those with 'formal power' (Davies, 2011: 325), i.e. the parents, and the need to regulate their Internet usage. While policy has 'encouraged parents' to support their children when learning with technology, there has been 'growing anxiety' around Internet safety and the trustworthiness associated with gaining knowledge from the Internet over standard textbooks (Davies, 2011: 324). British parents seem to mirror the anxiety American parents have about their perceived lack of control over their children's technology usage (Ito et al., 2010: 152) although at least in a Western context, this appears to correlate to expected notions of independence and autonomy (Davies, 2011: 325). Still, what certain children think about technology is usually as varied as what parents, researchers, and policy makers believe. While a lot of children admit that their parents take a persistent 'policing role' (Brent, 2005: 327), perhaps this is not actually required in all cases. For example, two young girls, aged 9, had the following

to say: ‘We might get a bit disturbed by something quite dark’ and ‘Sometimes you get emails and then you have attachments […] which could probably kill your computer’ (Davies, 2011: 331). Also of value to the dangers of the online world is the vast research by Livingstone et al. collectively titled ‘EU Kids Online’, spanning three stages from 2006 to 2014. Children’s online risks are assessed in great detail in a recent document, dividing them into four main categories: aggressive, sexual, values, and commercial (Livingstone, Masheroni, & Staksrud, 2015: 3). ‘Aggressive content’ includes violence, along with harassment and bullying. ‘Sexual content’ would include grooming attempts by strangers or sexual harassment of peers. ‘Values content’ applies to racism or other hate speech, being persuaded into various ideological positions, or being a part or victim of harmful user-generated content; and finally, ‘commercial’ applies to marketing attempts, including the misuse of personal data and copyright infringement. (ibid: 3).

Livingstone et al. have also described at length the many demographic and psychological factors for young users (ibid: 6), the bulk of which is far too large to be covered in such a review, but the conclusion is that while risks continue to change as technology changes, policy should continue to adapt to the needs of children through greater research (ibid: 14).

Regarding children’s abilities to understand risks involved, however (Davies, 2011: 331), this demonstrates that the children already understand, at a young age, the dangers of accessing rogue sites, with one disclosing that she would get her father involved whenever a supposed malicious activity arises (ibid.). With parental involvement, therefore, we can see that the target of e-safety mentioned in the House of Lord’s document can be easily met. Some children, naturally, like to keep secrets from their parents, and in the digital world it often involves account

registrations on social networking websites that parents would not approve of if they knew (Davies, 2011: 332). Dangers are still present without parental interaction, however, as one boy admits becoming addicted to online gaming (p.330) though he was eventually able to solve this issue with the help of peers (ibid.). To assume that all children have access to the Internet, or even up to date computers is another overgeneralisation which should be noted, though as the *Findings* (Chapter 5) explains, this has been a Government focus for some time now. Two children recounting the difficulties they face when being assigned homework to be completed online demonstrate that policy makers should realise that Great Britain still has a portion of the population unable to meet the standards set upon them:

> But [an 8-year-old computer the children use] doesn't have the Internet … mum has to write a letter saying we don't have the internet so we can't do the homework (Davies, 2011: 328).

Even for those who do have plentiful access to the Internet and hardware to use it, scepticism still exists even in this 'digitally raised' generation:

> I rarely use the Internet, unless I was really searching for something I wanted – sort of a second opinion of different information (Davies, 2011: 333).

Davies comments that these opinions are 'by no means unusual' (ibid.) and that while not outright rejecting the Internet, some children today recognise that it is not always the preferred choice for discovering information or getting help. Indeed, the Internet's purpose as a social platform, rather than the go-to for quick answers for education, may be a more commonly held belief than previously thought. As one student describes her 'A' Level studies:

> Just making notes through the textbook there, and then […] I go to the revision guide, and then if I'm still confused […] I go back to the textbook, if I'm still confused I go back to my teacher. […] sometimes if I'm confused at

> home… you like go to your room where your laptop is to Google it and then come away from it. (Davies, 2011: 333)

To draw a conclusion for this section, young people's opinions about technology usage are often mixed, with many seemingly being influenced by their parents to be wary of what the Internet may hold. Most often the sites used for educational purposes are Wikipedia or a search engine – mostly still Google. The apprehension on the part of the children, particularly those under 10 and firmly in Generation Z, may be an extension of their parents' observations of media reports warning of the dangers of unrestricted access to what is often a lawless domain. Without the technical know-how, or one or more components of digital literacy; the time required for what is initially a long arduous task; or ability to understand how to protect your children from dangerous websites and services on the Internet, many parents may simply fall back on a blanket ban or at least physical supervision, which is then transferred into their children's thoughts on the subject. Children who think in this way – that the Internet is either dangerous or a tool just to search for information and nothing more – are quite contrary to the children described by researchers who espouse a digital whiz kid generation who easily utilise new ways of thinking and understanding through technology *à la* Hague & Payton's (2010) digital literacy components from Section 1.

3.1.5.2. Teacher Opinions

On the opposite, and less favourable end of the digital divide, are the teachers, particularly those who find themselves from a previous generation. A certain type of discrimination is often apparent, both in the UK and abroad when matters of

technology are brought up: age-related bias. Though the West prides itself on the goal of fair treatment for all people, certain discriminatory practices often creep in. As Bowen explains of her initial thoughts upon meeting an elderly computer user:

> I found myself subscribing to a decontextualized ahistorical ideology of literacy: one that privileges the literacies and literate activities of younger people and figures elder adults as digitally deficient (Bowen, 2011: 587).

As I mentioned above, the entire concept of the digital divide, when applied in the form of 'natives' and 'immigrants' is divisive and serves little purpose other than to discriminate against those from other generations. While most would agree that not all younger people are adept users of technology and that not all 'older' people are completely lost with it – a strange claim in the first place as these are the people who invented such technologies – the fact remains that researchers (Prensky, 2001a, 2001b, 2004, 2006) often ascribe failures in IT application to the alleged lack of skills present in older generations. Bowen confirms that, within the American context:

> […] despite mounting evidence in the last several decades that literacy must be understood as a situated, social practice, an age-based ideology persists in public discourse on literacy – though sometimes in subtle ways (Bowen, 2011: 587).

This is an example of the American context aligning with the English one.

When it comes to teachers who are not using the latest technology in their classrooms, whatever it may be, instead of labelling them with words that imply there is something lacking in their characters which prevents them from using technology (muggles), perhaps it would be beneficial to examine previous studies in an attempt to discover if there is any underlying cause for this refusal or apprehension. For example, Becker, Ravitz, & Wong (1999) suggest that teachers who were trained

with technology are more often than not more positive about using technology inside the class. This could probably explain why newer teachers are more likely to adapt to newer methods of teaching rather than simply assuming it is because they are younger. While many studies (Burnett, 2011; Gobbo & Girardi, 2001) tend to use pre-service teachers as examples, due to the ability to easily question them, it is not always the case that these fresh teachers gravitate towards technology usage simply because they are taught to use them. Burnett's study (2011) is particularly focused on teacher identity and self-narratives and is described in more detail in the *Findings* (Chapter 5).

Two additional studies presented more negative opinions (Li and Walsh, 2010; Veen, 1993). Teachers described their distrust at the usefulness of technology, even though they claimed to understand how to use it. A quote from Li and Walsh's study from an EFL teacher demonstrates this problem:

> I don't really think computers can help students learn English better and improve their achievement (2010: 113).

Though in the above study, teachers also admitted their lack of creativity when it came to using computers in the class for their field, English language teaching, and may have benefitted from additional training or information on available tools to assist in preparing students. As with much international research, however, any study from China should not be generalised to the UK as their school system focuses heavily on exam results, particularly for university entrance.

Teachers' opinions are not always negative, however. To demonstrate, Graham's 'ongoing studies' (2012) on teachers' social lives in digital worlds are very helpful in

understanding the influences on teachers lives which draw them to or push them away from technology.

In the first study, Graham's goal was to use an informant interview to understand what young primary school teachers could remember about 'growing up in digital worlds at home and at school' (Graham, 2008: 10) and about their present digital lives (ibid.). Using her own and Lankshear and Knobel's (2003) terminology, teachers are divided into 'outsiders', those for whom technology is complicated; 'serious solitary school taught', meaning those who are confident with technology due to the teaching they received in school; and 'playful social' teachers, those for whom technology provides access to social and enjoyable activities (Graham, 2008: 12; 2009; 2012). Graham describes how teachers can move from solitary school-taught stages to being competent technology users who interact with digital worlds (2008: 13) using a teacher called 'Melanie' as an example. This shows that even though some teachers may have been removed from digital technology when they were younger, they can in fact learn enough to thrive in this new realm. Melanie describes how her attitude to computers changed over the years:

> […] the computer is switched on at all times and I use the Internet for everything, tickets, holidays […] I hardly use the phone […] I email friends.
>
> She downloads all her music from i-tunes [sic] on the Internet, and burns all her own songs onto CDs. She owns a digital camera, and uses it to download, edit and send photos. Melanie is completely at home in her digital worlds though she only entered it in her 20s (Graham, 2008).

As we see again, Prensky's (2001) claims that those born outside the Digital Native age range will always struggle with technology, meets another roadblock. I suggest that perhaps Prensky's 'immigrant accent' (2001: 3) concept applies here, and that

Melanie's skills would not be comparable to the best 'Digital Native' – but as mentioned above it is not as if all 'natives' are adept with all technologies either.

To conclude, in general teachers of all ages are willing to implement whatever is necessary to the classroom if they believe it will be beneficial to their students. It should not be assumed that teachers find technology intimidating, though such teachers do exist, simply because they are choosing not to use it.

3.2. On Policy Steering, Policy Levers, and Policy Drivers

Investigating government involvement in education often leads one to the concepts of policy steering, policy levers and policy drivers. This section thus explains the differences between the three. The steering of policy expands beyond England into an international scope (Green, 2000), which I discovered during a previous doctoral assignment (Chambers, 2014a) regarding secondary education in China. This section is therefore written to give a background to the policy analysis in the Findings section (Chapter 5) and integrated with the Foucauldian Methodology section (Chapter 4).

3.2.1. Policy Steering

Policy steering refers to:

> the processes whereby national governments have withdrawn from direct control over the administration of public services and have increasingly used a range of different levers to steer policy (Steer et al., 2007: 176).

It has been stated that policy steering itself grew out of the state realizing that 'reflexive modernisation' (Beck, 1994) was necessary in society, resulting in the

Labour Party taking this approach in 1997 (Steer et al., 2007: 176). Newman (2000) describes the process taken:

> [C]itizens and clients were recast as consumers, and public service organisations were recast in the image of the business world (Newman, 2000: 45).

Policy steering is accomplished by way of policy levers, and policy drivers. These are summarised in the next two sections.

3.2.2. Policy Levers

Policy levers, as used by Steer et al (2007: 177) are defined as 'governing instruments' (Kooiman, 2003) and play an important role in state intervention in public services. This thesis combines this definition with the Foucauldian devices listed in the Methodology (Chapter 4). For example, levers 'serve as shorthand for the wide array of functional mechanisms through which government and its agencies seek to implement policies' (Steer et al. 2007: 177). The idea that they have a non-neutral status (ibid.) integrates well with an analysis from a Foucauldian perspective.

This is further cemented when categorising the following as policy levers:

> Performance targets, standards, audit, inspection, quality assurance processes and powers to intervene where public services are "failing"' (Steer et al., 2007: 177).

Each of these would place gracefully into the realm of inspectors that Foucault described (Foucault, 1979: 185-187).

As noted by Newman (2000), (cited in Section 3.2.1, and further in Section 5.1), it was presumed that computers would modernise education, even during the Conservative rule of the 1980s and early 90s. This was expanded using what has been referred to as a new 'discourse of modernisation' (Newman, 2000; Steer et al.,

2007) from 1997 as New Labour entered parliament. This modernisation was 'presented as a rational process of improving public management' (Steer et al., 2007: 176) and 'of updating services to match the expectations of modern consumers […] to meet the business requirements of the modern world' (Newman, 2000: 46). This is described in more detail in Section 5.1 – Findings.

3.2.3. Policy Drivers

Policy drivers, on the other hand, are distinct from policy levers in that they describe policy goals. Documents such as the education acts or announcements towards a set objective that are included in Chapter 4, Section 4.5 would be examples of policy drivers (Shires, 2003). On this component, Steer et al. (2007) state:

> As well as providing the framework within which policy levers are constructed and implemented, policy drivers can prompt direct responses 'on the ground' (which may, however, constitute 'misreadings' (sp) of the intentions of policy-makers) (p. 177).

This, of course, can have unintended consequences, particularly in the case of interpretations of policy documents differing from the original intention. Shires (2003) comments that:

> [Policy drivers] may also change over time as new doctrine is implemented or new research findings put into practice (Shires, 2003: 4).

In the case of digital literacy expectations, as with the definitions of digital literacy, Chapter 5 – *Findings* reveals the continual modifications to objectives and targets for students and teachers from changing policy drivers coming from changes in government and contemporary research.

3.3. Historical Predictions about the Future

As many have discovered over the years, the fast-pace advancement of technology makes predictions for future usage very difficult. As I include my own predictions in Chapter 6, with the forthcoming Foucauldian analysis in mind, it provides useful evidence to consider what researchers thought was going to happen in the future – or the present for us – and comment on how technology and education has changed since then. In Section 1 I introduced Somekh's (2000) paper as a similar study to my own, detailing policy briefly from 1980-2000. Somekh also made predictions about what to expect in 2010 and beyond, and how to restructure schooling to 'make best use of the lightweight, mobile, new technology tools which are about to be widely available' (Somekh, 2000: 19). Somekh's predictions and assumptions demonstrate how difficult it is to predict the state of technology even five years into the future as her 100Kb/second assumed Internet speed, coupled with the minuscule '3Gbyte of hard disc' and '50Mbyte of RAM' were out of date by the year 2004, let alone 2010. By 2002 speeds of up to 1 megabit (1000Kb/s) were available as broadband packages, albeit the most expensive one a person could purchase. By 2006, cable Internet in the UK reached up to 20 megabits for home usage, and today speeds of up to 150mb are available for consumers – though this still pales in comparison to the easily attainable and cheap Japanese, South Korean, and Scandinavian speeds of 1,000mb/s. 'Google Fiber', a new service in the United States, is set to overhaul American connections too, with speeds comparable to the above East Asian and European countries. Somekh's additional predictions seem not to have come to fruition either, such as the suggestion that school hours will be split between class-time and:

> [spending] part of their time at school in the library or study centre, where they will be able to work either independently, using self-study materials, or on a group task in one of the group study rooms (Somekh, 2000: 34).

Though it is possible for schools to do this, it is not a requirement in the National Curriculum. Somekh also predicted that students 'from the age of 14' (ibid.) would work at home with permission from parents and the school. This is an interesting prediction because it is similar to the self-directed learning approach I disclosed in my value statement in Chapter 1. All of this was to take place under the overhauling of the education system that technology advocates like Somekh (at the time) would have liked, and would have been supported by 'technicians' with 'specialist training' to assist with the transitions and technical support. (ibid.). The biggest barrier to this implementation, apart from the obvious gargantuan cost of such an endeavour, seems to have been 'fixed assumptions and settled tradition' (Somekh, 2000: 35). Selwyn (2014) still distrusts the benefits of technology in education and he references articles (e.g. Facer et al., 2001) which seemed to be recommending the revolutionary renovation of the education system as a whole:

> Today we need self-confident, independent thinkers, whether team players or entrepreneurs, capable of acquiring a range of different skills and adapting to several jobs over a life time. Policy makers at the national and local levels have the power to make a difference in the way schools are organised (Somekh, 2000: 35).

One could question if changing the mode and media through which students learn – from textbooks to technology – would stimulate all of these positive things. Are we incapable of doing these without technology, for instance? Perhaps this idea would be more cogent in today's atmosphere as one finds while reading the House of Lord's document (2015) a greater backing for such reform, providing it equips students with wanted skills.

3.4. Conclusion

In this chapter, the many issues surrounding the concept of digital literacy have been addressed. Rather than adding to the 'squishiness' (Chase & Laufenberg: 2011: 535) of definitions, some previously established ideas were selected forming the definition of digital literacy throughout this thesis, namely that of Hague and Payton (2010). This review began by framing the analysis start date of 1988. This date was not chosen at random, but is the year that the National Curriculum was introduced and the government began influencing education more so than previous years where religious requirements were the only necessity. With the government taking on an active role in what was taught, it was obligatory to include an explanation on policy steering, policy levers, and policy drivers. These fit into the Foucauldian methodology chosen for the analysis which follows in Chapter 4 and Chapter 5 respectively. Prensky's (2001a) heavily criticised 'digital native' and 'digital immigrant' terms were selected because of what they represent – the idea that younger people are more knowledgeable about technology than older people – and because it is often still held to be true by society.

Chapter 4: Methodology

This chapter explains the methodology of the research. In particular, it describes how the policy documents are to be analysed along with elaborating on the Foucauldian 'tool-kit' approach taken throughout the *Findings* (Chapter 5) chapter.

4.1. On Foucault

> *A society without power relations can only be an abstraction* (Foucault, 1982: 222-223).

This section justifies my use of Foucauldian theory. To achieve this, Foucault's work is compared to other prominent philosophers. The critique of Foucault from diverse perspectives intends to strengthen the arguments, and demonstrate an understanding of competing viewpoints. Thus, Section 4.3 compares Foucault to other social theorists, Habermas and Bourdieu. The concluding segment, Section 3.4, contains selections of Foucault's work, as applied to education, which are used in Chapter 5 – *Findings*.

4.1.1. Defining Foucauldian Terms

The following subsection provides definitions to the Foucauldian terms used within this thesis.

> I wish to know how the reflexivity of the subject and the discourse of truth are linked – "How can the subject tell the truth about itself?" (Foucault, 1994: 128).

By 'reflexivity of the subject' (ibid.) Foucault is referring to how 'humans are self-conscious beings who can think about themselves' (Jardine, 2010: 1) and 'discourse

of truth' (Foucault, 1994: 128) means 'the body of knowledge that is held to be true in a particular era' (Jardine, 2010: 1). Foucault's view was that we, as people, are bound by the system in which we live, and this influences our very perception of that world (ibid: 2). For clarification on his views, he once wrote:

> I should like to know whether the subjects responsible for scientific discourse are not determined in their situation, their function, their perceptive capacity, and their practical possibilities by conditions that dominate and even overwhelm them (Foucault, 2002: xiv).

Further to this, the analysis makes use of *discursive*, the regular communications in text and spoken word (Foucault, 2002) and the *non-discursive*, 'the institutions, political events, economic practices and processes' (Foucault, 1974: 162) present in society.

Jardine (2010) describes how teachers are in 'positions of terrific day-to-day power' (p.2) when it comes to their students. The ability to dictate what is true and false, to punish, fail, or reward a pupil gives the teacher vast control over the future of that person's life. From the teacher's perspective, however, it may seem like the power they exude is mostly given to them from higher up (ibid: 3), as the British government, through policy, controls much of what goes on in a teacher's life too. The application of these control methods were known to Foucault as *disciplining*, the 'techniques or effects that are used to train an individual' (Jardine, 2010: 7); *normalising*, the 'judgments [sic] and techniques (such as rewards and punishments) used to classify individuals according to a standard or norm' (ibid.); and *objectifying*, 'techniques or effects that take away individuals' ability to choose for themselves, and which turn them into an object known and controlled by others' (ibid: 8). Foucault comments this removal of personal autonomy as follows:

> "At every moment, step by step, one must confront what one is thinking and saying with what one is doing, with what one is" (Miller, 1994: 9).

Foucault's work with mentally-ill patients, homosexual communities, prisoners and Marxists (Miller, 1994), which details his findings is unfortunately too vast for this thesis to cover, though his main concern was:

> […] to locate the forms of power, the channels it takes, and the discourses it permeates in order to reach the most tenuous individual modes of behaviour (Foucault, 1990b: 11).

So far I have been careful to select the relevant analytical terminology and tools from Foucault's work which can apply to an educational context. One of the benefits of using Foucault for analytical work is that his 'scattered bits and pieces' (Jardine, 2010: 10) of theory, spread out over the years, work very well for picking and choosing based on those which apply to the subject being critiqued. This is known as the 'tool-kit' approach (Walzer, 1983: 481), which utilises relevant aspects of Foucault's work and is arranged in a table in Section 4.4 below.

Within the context of education, one can apply more of Foucault's labels for techniques used to control others. The *disciplinary acts of power*, which are used to examine and train an individual, often through surveillance (Jardine, 2010: 10) combined with *disciplinary knowledge*, the 'modern Western knowledge used to monitor, classify, and control individuals' (ibid.) forms an overarching *grid of intelligibility*, which is 'the framework in which elements of knowledge of an era are arranged' (Jardine, 2010: 22). Also of value is the concept of *marginalised voices* (Jardine, 2010: 12), which describes those whose opinions are placed outside the accepted norms. In the case of this analysis, those who speak against, for example

the established truth of the benefits of digital literacy or the split between Digital Natives/Immigrants would be classed as part of this group. With this also comes *capillary actions*, which refers to when the dominant systems of knowledge and acts of power have an influence on an individual (Jardine, 2010: 15).

The terms *panopticon, panopticonism,* and *the gaze* are used to refer to the systems of observation, originally from the concept of a prison designed by Jeremy Bentham, to monitor individuals without them knowing when the observations would take place, just that they might (Foucault, 1980: 148). The panopticon being a 'central observation point' (ibid.: 148) which allowed for the constant observation of workers, throughout the day (Foucault, 1979: 174, 211) was described in further detail as follows:

> [an] instrument and mode of intervention of power, which can be implemented in hospitals, workshops, schools, prisons. Whenever one is dealing with a multiplicity of individuals on whom a task or particular form of behaviour must be imposed, the panoptic schema may be used (ibid.: 205).

These last three concepts, as they apply to education, are elaborated on further in the next subsections, and the Findings (Chapter 5).

The last major term to define is the *examination*. (Foucault, 1979: 184, 185-187) The examination is where many of these techniques combine, providing a 'normalising gaze, a surveillance that makes it possible to qualify, to classify, and to punish' (Jardine, 2010: 63). That is, the examination deals with knowledge that should be known, and is official, casting aside other knowledge students (and teachers) may have for the authorised truth:

> The examination that places individuals in a field of surveillance also situates them in a network of writing; it engages them in a whole mass of documents that capture and fix them (Foucault, 1979: 189).

> It is the examination which, by combining hierarchical surveillance and normalising judgement, assures the great disciplinary functions of distribution and classification, maximum extraction of forces and time, continuous genetic accumulation, optimum combination of aptitudes and, thereby, the fabrication of cellular, organic, genetic and combinatory individuality (ibid: 192).

In this subsection, I have outlined some of the analytical techniques Foucault utilised in his analysis of Western society. How these apply to digital literacy policy is expanded on throughout the Findings (Chapter 5) and the rest of this section. In the next subsection, I describe the pitfalls of using Foucault in research, and how I attempt to avoid criticisms of using his techniques in an 'incorrect' manner (Ball, 2013).

4.1.2. Using Foucault

Due to the vast scope of Foucault's writings, it would be impossible to cover everything he has written in this dissertation – not to mention the injustice it would do to limit such an analysis. As it happens, Foucault's 'tool kit' approach (Walzer, 1983: 481) and lack of systematic technique (Jardine, 2010: 9-10) assists my writing and tolerates my alliance with other writers on the subject by capitalising on relevant details and disregarding topics out of my current scope of understanding or that are simply not relevant to education (Walzer, 1983). The focus, of course, is how Foucault's work applies to digital literacy education and its history in England. While never actually writing anything about educational history (Devine-Eller, 2004: 1), and obviously not about digital literacy, Foucault's work has nevertheless been found applicable in this newer context by other researchers (Ball, 2013; Jardine, 2010). Though much like Foucault himself, applications of these techniques of criticism have themselves been met with disapproval:

> Today, analyses employing a Foucauldian perspective can be found throughout the educational research establishment. Foucauldian buzzwords such as “power/knowledge”, “panoptic gaze”, and “archaeology (and/or) genealogy” proliferate in conferences, debates, and journal articles (Butin, 2001: 159-160).

This is a valid criticism and pitfall in which I hope not to stumble, though such ‘buzzwords’ (ibid.) are naturally necessary when one discusses applications of a limited section of theory that can apply to a specific subject. For example, schooling, which is a vast part of this dissertation, compels one to inevitably mention teacher/student relationships, bringing in power and knowledge. Statutory testing, as well, one may find, lends itself perfectly to the realm of Foucault’s panopticon (Foucault, 1980: 148). This last point, once combined with technology, seems almost obligatory to include under any Foucauldian-style analysis, and one of which I appear guilty in later chapters – though I try my best to avoid usage that warrants such criticisms as found above. To do this, one must tread carefully through his work, without mistakenly ‘abusing’ (Peters and Besley, 2007: 3) him, detaching linked ideas such as knowledge from power (Ball, 2013: 19) or misinterpreting definitions such as power or discourse (ibid.). This dissertation analyses and discusses the ‘discourse’ around digital literacy policy and practice. Therefore it is necessary to define exactly what he meant by this term, and how I have interpreted it. The meaning of discourse, when applied in a Foucauldian sense, does not mean *language* or *writing* as is the case in the vernacular (Mills, 2003: 55). When using discourse, the meaning has been taken directly from Foucault:

> […] discourse is secretly based on an “already said”; and that this “already said” is not merely a phrase that has been already spoken, or a text that has been written, but a “never said”, an incorporated discourse, a voice as silent as breath, a writing that is merely the hollow of its own mark (Foucault, 1974: 25).

Under this definition, discussing *discourse* is more to do with reality itself – what is truth, correct, acceptable, and necessary to have come to whatever understanding or proposal is being suggested or, as Foucault describes it, the '"more" that we must reveal and describe' (ibid.: 49). Like Foucault, it is the intention of this analysis to focus on not the desired effects of policy, but the actual effects in real terms to the individuals it influences (Foucault, 1979: 6-7, 23-24; 1982: 223). The discourse is not necessarily an articulated expression arising out of a context, but is part of the context itself; it is about values and beliefs, ways of being and behaving and embedded in language.

Before continuing, Ball brings up a curious question regarding the misunderstandings described above: 'does it matter if it produces useful work?' (Ball, 2013: 19). Indeed, how many researchers does it take to misinterpret Foucault before that misinterpretation becomes the norm and the discourse involved in 'doing Foucault' (ibid.) warps his original meaning? The tool-kit (Allen, 2012) approach mentioned in subsection 3.1 may make such misrepresentations of Foucault's work a simple task by allowing researchers to pick and choose from concepts described in subsection 3.1, and accidentally separating interdependent ideas. Curiously enough, Foucault himself had to describe what he meant when using the term 'Nietzschean' as a self-descriptor:

> For myself, I prefer to utilise the writers I like. The only valid tribute to a thought such as Nietzsche's is precisely to use it, to deform it, to make it groan and protest. And if commentators then say that I am being faithful or unfaithful to Nietzsche, that is of absolutely no importance (Foucault, 1980: 53-54).

In Section 1, discussing contemporary issues with digital literacy, I recapped concerns regarding trust of technology in education. While the trust, or lack thereof, mentioned below refers to a lack of faith in the effectiveness of technology, my own version of distrust relates back to one of our Foucauldian 'buzzwords' (Butin, 2001: 159-160), which I fear I must invoke, lest this be detached from the research. That is, of course, the principle of Panopticism and 'The Gaze' (Foucault, 1979: 171, 205; 1980: 71, 148; Jardine, 2010: 60-61). The Gaze is described by Foucault as the ability to observe 'working class housing estates, hospitals, asylums, prisons, [and] schools' (1979: 171), based on a military model, allowing 'easy, unobstructed, constant observation of all the individuals from one central location' (Jardine, 2010: 59). Of course, the individuals being observed, or, subjectified (Foucault, 1979: 170-171, 187) – that is, being 'turned into an object through an act of knowledge or power' (Jardine, 2010: 59) – cannot see the 'overseer' (Jardine, 2010: 60). Panopticism, therefore, is the 'architectural design that allowed individuals to be observed from a central location without their knowledge' (Jardine, 2010: 60). Regarding education, researchers using this concept often apply the architecture of the school, and regularly compare it to that of a prison (Bowles and Gintis, 1976; Foucault, 1979; Giroux, 2003; Hirschfield, 2008; Parenti, 2000; Staples, 2000; Wacquant, 2001) a contrast which, I freely admit, I have engaged in one time or another. With 85% of all secondary schools having CCTV cameras monitoring students as of 2011 (Taylor, 2011), one could feasibly make the case that schools and prisons are very close in the monitoring department. Naturally it is a simple task to offer up comparisons of the two: they both involve strict hierarchies, groupings of students/inmates, students are told when to eat, when to play, and so on. This is not what I wish to dwell on during the policy analysis, though it is an important

comparison to establish as it relates to the Foucauldian concepts identified in subsection 4.4. through which policy is analysed. The literature, both in academic journal articles, some of which are mentioned above, and certain books (Gatto, 1992, 2008) from authors around the world, paint the school system as a constricting or stifling construct full of surveillance devices. My application of the Panopticon narrows further onto the computers and software themselves, the gaze is the code present in programs being used by students and teachers. I am not the first researcher, by a long shot, to apply this definition; Webster and Robins (1986) got there far before me. Their study, however, was during a time before high-speed broadband Internet, mobile devices carried 24/7, and Operating Systems capable of 'phoning home' to the elusive overseer who, in light of recent revelations, could be government security agencies or private corporations interested in user information to target advertisements. The interesting part about this is how it does not deviate from Foucault's model. Individuals who are aware of such practices conform to desired behaviour (Foucault, 1979: 201-3, 216-217; 1980: 155; 1983: 223). In the case of government agencies, this behaviour would be conducting legal activities – though few people being monitored were ever associated with illegal actions in the first place. The difference between teachers using a program to monitor every student's screen in the computer lab is that one is aware of when the teacher may be watching – this is not the case when it comes to the observer(s) being in another location on Earth, receiving data from your computer. In this case, the disciplined individual truly does not know when they are being monitored (Foucault, 1979: 201), nor for what reason. That is, if they are even aware at all. Using the original and this modified definition of the Panopticon and The Gaze, Section 1.5 gains another general question for use in Chapter 5. Another interesting take on the Panopticon

was back in 1990 with the ‘Super-Panopticon’ (Poster, 1990, 1995). This idea was based on the up and coming Internet and the ability for computers to hold vast databases of information on users. Poster’s books, again written before the arrival of high speed Internet, demonstrate a critical approach to technology and the government’s response to the comparatively anonymous Internet of the 90s. It was argued (Feenberg, 1995) that technology would become an extension of already existing power that governments wielded over schools. Through databases created by consumers inputting information, we, the users, would be watched by a Panopticon with no limitations: ‘[the] population participates in its own self-constitution as subjects in the normalising gaze of the Superpanopticon’ (Poster, 1990: 97). Within this context, the consumers themselves are responsible for giving away information. This differs from my perception as I contend that users are not aware of their information being catalogued in the way that Poster suggests. Today it is possible to be entirely oblivious of the observers as the nature of the Internet and our social worlds have evolved beyond what was possible in the 1990s. The government is not the only one capable of watching and no longer are users simply entering government ID documents onto forms to be categorised. Today, it is a matter of scale and multiple observers – both governmental and corporate – who have access to vast expanses of data.

With this constant monitoring, and only because of the ability to do this, states Foucault (1979: 215-6), comes the ability to ‘control/prescribe/punish/reward’ every action of every person (Jardine, 2010: 57). Take for example, a website with advertisements built in. A user decides, as some do, to install blocking software in order to avoid seeing the adverts which are, by their very design, used as monitoring tools, since they log the behaviour of those who click on them, for example. The

course of action, taken by the website provider is one of two options: either ignore these users as they are small in number and risk the amount growing larger, or, as Internet users often discover, attempt to prevent access to the service until the correct action – disabling the ad-blocking software – is achieved. This is a mild form of intrusion, yes, but just one example of how attitudes can be modified. Another, more sinister tactic, is to force an upgrade of a user's operating system, which is now compromised with privacy breeching computer code, in order to restore compatibility to once functional applications, or enable newer standards to be used correctly. As Jardine notes:

> These activities constantly and mutually feed one upon the other in a vicious vortex which has the objectified individual as its product, target, and premise (2010: 57).

Thus, another question materialises for the analysis, one related to the aspect of discipline, punishment, reward, and normative judgements, not just regarding those types of examples above, but to technology-based policy in schools applicable to students and teachers alike:

> […] and in schools, not only are those who are examined, but those who do the examining – teachers and schools – are often rewarded or punished on the basis of their student's examination results (Jardine, 2010: 63).

In this subsection, I have used a tool-kit approach (Allen, 2012) to select the relevant concepts from Foucault's work that apply to education and more specifically the analysis I conduct later on in Chapter 5. In the next subsection, Foucault is compared to other theorists - Habermas and Bourdieu – to explain why certain philosophers were not selected in Foucault's place for this study.

4.1.3 Why Foucault?

This subsection is dedicated to the comparison of Foucault and two other prominent social theorists, Habermas and Bourdieu. Often used in comparison to one another, this section highlights some distinctions between their theories along with my comments on how they would relate to an analysis of policy. Nevertheless, I offer critique, where applicable, and retain focus on the subject at hand: an analysis of technology in education.

4.1.4. Foucault and Habermas

Habermas is most known for the concepts of the Theory of Communicative Action (McCarthy, 1985), which explains that 'human action and understanding can be fruitfully analysed as having a linguistic structure' (Fultner, 2011: 4) and *Rationalisation*, a concept which describes the systematic replacement of traditions and values with reasoned (or rational) versions (Habermas, 1987: 2). An example of how rationalisation could apply to this research would be to suggest that traditional teaching methods were being replaced, methodically, with digital practices under the guise of progress (ibid). The approximate Foucauldian equivalent would be the use of disciplinary acts of power used to train individuals to the constituted (human created) (Jardine, 2010: 10) discourse of truth (Foucault, 1994: 128).

The Theory of Communicative Action has three parts:

> (1) to develop a concept of rationality that is no longer tied to, and limited by, the subjectivistic and individualistic premises of modern philosophy and social theory; (2) to construct a two-level concept of society that integrates the lifeworld and systems paradigms; and, finally, (3) to sketch out, against this background, a critical theory of modernity which analyses and accounts for its

> pathologies in a way that suggests a redirection rather than an abandonment of the project of enlightenment (McCarthy, 1985: viii).

Habermas distances himself from other social theorists' views, particularly Weber's, on rationality binding it to language and argumentation, which is explained as:

> […] that type of speech in which participants thematize contested validity claims and attempt to vindicate or criticize [sic] them through argumentation (McCarthy, 1985: 18).

This communicative action is deliberate and involves two or more participants (ibid: 86) investigating language usage through self-reflection in order to identify what is true (ibid: 95). Its focus on the meritocratic nature of language and argumentation, however, has drawn criticism from some researchers and Habermas's downplaying of the influence of power on language draws one back to Foucault's work:

> Habermas subscribes to an unrealistic ideal of power-free communication […] Michel Foucault remedies this idealism by treating knowledge as power; his work is in fact suffused with applications of knowledge for the control of human bodies (McNeeley, 2003).

The comparison between Foucault and Habermas is perhaps one of the more obvious choices, given their similar fields, those being enlightenment, modernity, and critique (Ashenden and Owen, 1999: 1). During their careers, however, there was little 'open dialogue' (ibid.). Kelly (1994) explains:

> […] the amount of discussion by each philosopher about the other was unintentionally lopsided in Habermas' favour. He devoted two chapters of *The Philosophical Discourse of Modernity* to Foucault, but the book was published after Foucault's death and this received no reply. […] the effect of this lop-sidedness is that the debate is too often construed in Habermasian terms. (Kelly, 1994: 4).

Foucault's supporters (Dean, 1994; Dreyfus and Rabinow, 1986; Owen, 1995; Patton, 1994; Schmidt and Wartenberg, 1994), however, have been quick to defend

his brand of critique against those (Fraser, 1989; Honneth, 1991; MacCarthy, 1990) who seek to reveal 'the incoherence of Foucault's practice of critical reflection' (Ashenden and Owen, 1999: 1).

A chief critique of Foucault by those in the Habermas camp is his apparently 'self-defeating theory of power' (Osborne, 1999: 45). They claim that Foucault aspires through his critique of power to rise above it, yet he claims power is inescapable and everywhere (Foucault, 1998: 63), seemingly rendering his assessment as faulty (Habermas, 1987). Defenders of Foucault often label this critique as a fallacy of presupposition (Weng, 2014), with the conclusion already stated before the premise, or choose to ignore such critiques entirely. McWhorter summed up her original thoughts on such attacks:

> [the] most boring, irritating, and seemingly irrelevant of all were Habermas's tortured and contorted critiques (1999: xvi).

Indeed such a reaction appears common-place, as Allen (2009) describes it:

> The Habermasians seem to think they have won, while the Foucaultians act as if they were not even playing (Allen, 2009: 2).

Tully (1999: 90) notes that Habermas and others raised at least four initial objections to Foucault's work up until 1977:

> Foucault studies underlying practices rather than what agents say and do and thereby generates a kind of presentism; his approach is unreasonable because it violates universal validity claims; it is context-bound rather than context-transcending; and he does not account for the normative dimension of his analysis (Tully, 1999: 90)

During 1978-84, Foucault acknowledged and worked to fix these issues, and stated:

> [my philosophy is] a long and tentative exercise that needed to be revised and corrected again and again. […] [It was necessary] to go back through what I

> was already thinking, to think it differently, and to see what I had done from a new vantage point and in a clearer light (Foucault, 1985: 9, 11).

Tully describes how along with Foucault's modifications, four objections of his own were thrown back towards Habermas, including the claim that Habermas' work is not as critical, uncritical of 'its own form of reflection' and a 'less effective critique of limits in the present' (Tully, 1999: 91). To continue the cycle of Foucauldians against Habermasians, Tully issues a challenge to the other side to 'keep the work of reciprocal elucidation going' (ibid.). Tully additionally discusses:

> the *telos* [(purpose)] of questioning a limit of our thought and action in the present – a form of our subjectivity – in Foucault's philosophy is to open up the possibility of thinking and acting differently (Tully, 1999: 94).

Although I agree that Foucault's philosophical goal (telos) is to open up different ways of thinking, and this is part of what attracts me to the theory, the above quotation seems to imply that, contrary to Foucault's philosophy, Habermas' way of thinking restricts this. While I disagree with Tully on this particular point, his objective in the chapter is to offer what he believes to be legitimate criticism of Habermas based on the four previous attacks on Foucault. With all of the above established, if one were to use Habermas in an analysis such as this, would it account for power discrepancies or differing ethics, particularly when Habermas himself acknowledges this can be a pitfall? (See: 'presentism' and Habermas, 1990). Is it even appropriate to discuss the critiques presented by these two authors as framed through our own time period's conceptualisations and understandings?

In conclusion, while Foucault's theories and Habermas' theories appeal to different types of researcher, and although there has been at least one call to merge the philosophies (Allen, 2009: 3-4), I would argue that they are different in enough ways

to be incompatible, though seemingly this suggestion is provocative. It is not the point to eliminate power, to create a balance of power, but 'the achievement of mobile power relations in which one subject's superiority over the other can never be guaranteed' (Thompson, 1999: 200-201). This allows for a 'reversibility of their situation' (ibid.: 201). Certainly, though, it is Foucault's theories on specialised knowledge and power, of normalising situations and producing objectified individuals (Foucault, 1990b; Wang, 2014: 1), that draw me to his philosophy rather than to Habermas's. Though I cannot say I fully agree or disagree with it, a 'communicative rationality analysis' of digital literacy policy would certainly be possible, but this approach ignores various aspects of society in my mind to warrant hesitation of its application. Namely, historical conflicts (Eley 1992); issues related to gender and ethnicity (Cohen 1995, Fraser 1987, Ryan 1992); and the absence of the concept of power differences between argumentative participants (McNeeley, 2003) would be important omissions in the analysis.

4.1.5. Foucault and Bourdieu

In contrast to the above comparison between Foucault and Habermas, Foucault and Bourdieu share more in common, not simply because they were both French and therefore spoke the same language, but also colleagues and friends (Callewaert, 2006: 1). A simple distinction between the two, which is expanded upon in more detail, is that Foucault's concept of 'discipline', combined with a focus on violence and control, separates him from Bourdieu's, admittedly similar understanding of power through his concept of 'habitas' (Navarro, 2006: 16). Indeed it is this focus on punishment that I find most appealing to the application of educational policy

analysis, as the school as an institution acts not just to discipline students but teachers too. Wacquant states that habitas is:

> a mediating notion that revokes the common sense duality between the individual and the social by capturing 'the internalisation of externality and the externalisation of internality', that is, the way society becomes deposited in persons in the form of lasting dispositions, or trained capacities and structured propensities to think, feel, and act in determinate ways, which then guide them in their creative responses to the constraints and solicitations of their extant milieu (Wacquant, 2005: 316).

It is 'not fixed or permanent, and can be changed under unexpected situations or over a long historical period' (Navarro 2006: 16).

Bourdieu's concepts, therefore could just as easily be applied to a study on education as Foucault, particularly his idea of 'cultural capital' (Bourdieu, 1977, p. 494; Gaventa 2003: 6), which could help to identify what is assumed to be taken for granted in education and therefore identify issues faced by the have-nots. Bourdieu takes a particularly critical stance towards education, at least in some of his writings, and describes it thus:

> [education] is in fact one of the most effective means of perpetuating the existing social pattern, as it both provides an apparent justification for social inequalities and gives recognition to the cultural heritage, that is, to a social gift treated as a natural one (Bourdieu, 1974, p. 32).

This challenges any notions of meritocracy in the education system, though Allen (2013) has already dismissed this as a fantasy. Sullivan (2002), rejects the use of Bourdieu's above concepts entirely, stating:

> Bourdieu's project is extremely ambitious […and] many elements of Bourdieu's theoretical work are empirically unhelpful. […] habitus is a concept with some intuitive plausibility, but is at once too all-inclusive and too vacuous to be of any use to empirical researchers. […] Some of the empirical findings on cultural capital seem to contradict one another (2002: 163).

I agree that it is not entirely accurate to suggest that one's social class restricts or enables educational success, given that one of the most important known indicators of student success is argued to be parental involvement, regardless of income or social background (Henderson and Mapp, 2002).

It is therefore my conclusion that while certain aspects of Bourdieu's theories can be applied to my study, for example his concept of cultural capital would be useful in cases involving class and social mobility, Foucault's work aligns more with the type of analysis I wish to conduct. Jardine (2010) gives this apt description of Foucault's work:

> His critiques and insights into the nature of knowledge, formulated through his careful, thoughtful examination of historical documents, helps teachers and students question what we are doing when we teach a body of knowledge as mandated by a modern governmental department as a body of immutable, proven truths that all students must learn (p. 79).

These insights are ones which I envisaged as appropriate to explore, using a new lens, the way policy has been delineated in relation to ICT in a specific historical and political context – England.

4.2. Explaining the Methodology

‘Selection of methodology and methods has a great deal to do with where researchers “are coming from”’ (Wellington, Bathmaker, Hunt, McCulloch & Sikes: 2005: 99).

As I have previously written, (Chambers 2014b), if one is to apply the standard three assumptions described by Wellington et al. (2005: 100-104) – that of ontological assumptions, epistemological assumptions, and assumptions of human nature and agency – understanding why researchers often disagree with one another would be easier. My research during the policy analysis is concerned with ontology – the study of that which exists – namely ‘truth’, which is vital to all parties when passing policy decisions that influence schools. I described in the *Introduction* (Chapter 1) that my way of looking at the world has changed since beginning this doctorate – particularly within the field of social science. Initially my computer science background led me to favour positivism and the scientific method as this approach is best for determining what is most likely real, based on repeated experimentation and confirmation. I believe now, however, that the positivist approach is not advantageous when discussing human thought and behaviour. Indeed, in the social realm, perfectly repeatable experiments are often difficult, if not impossible, to perform due to the complex nature of social interactions and decision making. Positivism is incapable of providing the framework to analyse *why* people do the things they do, and therefore I have taken on a more Interpretivist (or Antipositivist approach). Interpretivism, often used as a collective term (Collins, 2010: 38) allows researchers to ‘assume that access to reality (given socially or constructed) is only through social constructions such as language, consciousness, shared meanings, and instruments’ (Myers, 2008: 38). In contrast to positivism, this invokes the idea of *subjective truth*. Additionally,

one's epistemological assumptions under this idea questions whether the truth discovered under one study is simply accurate only to that group of people or through the eyes of that researcher – a direct opposite of the scientific method to be sure. It is not my objective to pretend that what is, is not, and what is not, is. Instead, I am interested in how 'truth values' are modified and pushed onto others based on who is describing the situation. In short, this is why I chose to analyse policy through a Foucauldian lens. His work assists with deconstructing which dominant narratives influence that which is known to be correct.

Wellington et al. (2005) stated: 'the more social power you have, the more you can choose what to do' (p. 103). That is, people can make their own decisions, but these choices are restricted to a certain set of actions. Teachers, for example, may carve out their own identity seemingly of free will, but through the choices given to them by the culture in which they live. Using Giddens' (1991) work on self-identity, and combining it with Foucault's (1982; 1988: 18) understanding of identity restrictions through the use of power, one can challenge the notion of human nature and agency. For if social power (Wellington et al., 2005) is removed, one would expect there to be little choice but to conform to normalised practices and ideas.

4.3. Foucauldian 'Tool-kit' Approach

To explain how the Foucauldian analytical tools, as I refer to them below, were selected, this subsection explains what is meant by the 'tool-kit' approach to Foucault's work.

Throughout the Literature Review (Chapter 3) and the Findings section (Chapter 5) I have employed Foucauldian analysis techniques in addition to answering the Research Questions listed in Chapter 2. These 'devices', as they are referred to in

Chapter 4, are based on selected Foucauldian theory and the following subsection explains why these specific parts of Foucault's work were chosen over others.

Part of the appeal of Foucault's work to me is the ability to select parts that are relevant to one's research whilst leaving out irrelevant components. This modular approach helps to build an analytical framework from which to critique the subject at hand and is, in my opinion, one of the strengths of Foucauldian analysis. Foucault himself, for example, did not write specifically on modern educational matters, but gives the suggestion to pick and choose relevant theory from his writings (Allen, 2012) and not to apply techniques in 'a uniform way' (Foucault, 1978: 240). This is known by Jardine as an 'unsystematic' analysis (Jardine, 2010: 9-10) and to others (Walzer, 1983: 481) as the 'tool-kit' approach. Foucault describes himself as an 'experimenter' (Foucault, 1974: 240) and not a theorist. He 'write[s] in order to change [himself] and in order not to think the same thing as before' (ibid.). Thus, while Foucault wrote about prison systems and sexuality in addition to the ideas noted in the Literature Review (Chapter 3, Section 3), one is encouraged to only select the most useful of analytical techniques – to become the experimenter. I have employed this strategy throughout the analysis, hence the use of this descriptor. To address the problem of using Foucault within any political structure and outside the boundaries of what his theories were supposed to address, Allen offers this advice:

> Whilst the invitation to use his work creatively helps to clarify Foucault's perspective on knowledge, this should be set within the overall context of Foucault's politics (Allen, 2012).

Therefore, while Foucauldian theories used for analysis in this thesis are taken from areas that may not easily be linked to educational contexts, they are all taken from within Foucault's works as they apply to the subject of this thesis.

A constraint of the thesis which helps drive the decision to use a tool-kit approach is that of the word limit and the time limit presented to complete the study. Thus one may assess this approach as limiting that which can be analysed to the preconceived concepts selected by the researcher and this would influence the study. Such limitations are noted in Chapter 7, and while I am aware that issues of this nature may be brought up, the aforementioned constraints give more reason to utilise an approach such as this one as it is on offer by the original theorist.

This chapter has explained the methodology used throughout the next chapter: An unsystematic usage of relevant Foucauldian ideology to analyse digital literacy policy in England.

4.4. Selecting Foucauldian Terms

With the previous sections in place, the following terminology from the perhaps disputably named ‘Foucauldian perspective’ (Ball, 2013: 1) is used during the policy analysis, to the benefit of answering the three research questions in Chapter 2. As they are part of the methodology of this analysis, their wider context is explained in the table below.

Foucauldian Tool-Kit Device	Usage in Thesis
Discourses and Episteme	The word 'Discourse' is used in this thesis as a shortened form of 'Discourse of Truth' as described earlier in Section 4.1.2. Within the context of this study, it covers the knowledge that is 'known' to be true in an era (Jardine, 2010: 22). For example, the 'Digital Native' (Prensky, 2001a) explanation is a widely held 'truth' within society, even today, with apparently few outside of academia questioning its validity as a theory to explain the presumed skill differential between young and old users of technology (Young, 2013). The word 'Episteme', meaning that *a priori* which makes possible discourses and knowledge (Foucault, 1980: 197), is used to demonstrate the conditions necessary for statements and knowledge to be 'characterized [sic] as scientific' (ibid.). Within the thesis, this refers to the conditions necessary for certain beliefs on the topic of digital literacy to become accepted.
Normalising Techniques and Objectification	The *Normalising Techniques* in the context presented refer to rewards and punishments that exist within the education system. This concept, which is also related to Disciplinary Acts of Power, seeks to compare individuals to a 'standard' put forth by those in power. Objectification is a concept linked to Normalising and Disciplining. Foucault's idea of this being, as stated above, the procedures to remove choices from an individual (Foucault, 1979; 1983: 211) resulting in others controlling them. Within the context of education, teachers are more likely than others to be stripped of this individualism than most, with students the next target.

Disciplinary Acts of Power	The *Disciplinary Acts of Power* referred to within the thesis describe the techniques used to train teachers to conform to a standard approach. These consist of the examination and surveillance (Jardine, 2010: 10), the various demands placed on teachers to meet requirements and targets, or classifications into groups based on assessed or estimated abilities.
Marginalised Voices	The term *Marginalised Voices* discussed in the thesis refers primarily to those who question the dominant narrative, be they researchers, teachers, or students, who have been systematically side-lined.
The Gaze and Panopticon	Used originally for systems of observation in the physical sense, this thesis makes use of these terms in the sense of the digital. That is, while the observed are still unaware if they are being watched, the observers can exist in the form of computer algorithms.

4.5. Selecting Policy Documents

The following table chronologically illustrates the policy documents selected, demonstrating change over time; how and to whom they were distributed; and the process of analysis and interpretation. Education Acts are available from the official government legislation website: https://www.legislation.gov.uk. Others from the Department of Education website: https://www.education.gov.uk.

Policy Document	Status and Dissemination	Reason for Inclusion and Process of Analysis/Interpretation
Great Britain (1988). *The Education Reform Act 1988.* c. 40. London: The Stationery Office.	This Act is a follow-on to "The National Curriculum 5-16: a consultation document" (Great Britain. Department of Education and Science, 1987), which announced the Government's plan to introduce the National Curriculum. The Education Act introduced, among various other things (e.g. Key Stages, City Technical Colleges), the National Curriculum. This Education Act, while presented to schools to give them back power (Gillard, 2011) was constantly revised and was 'written by a government quango [where] teachers had virtually no say in its design or construction' (Gillard, 2011).	This Education Act introduces the National Curriculum and its introduction was the first time the Government concerned themselves with what should be in education outside of the mandated religious courses, which were also expanded in more detail under this legislation (Section 6(1)). Gillard (2011) states that: 'perhaps the most damaging outcome of it was that it prevented teachers and schools from being curriculum innovators and demoted them to curriculum "deliverers"'.
Great Britain. Department for Education and Employment. (1997). *Connecting the Learning Society*.	From the 'When will all this happen?' section of the paper itself, the timeframe for implementation was as follows: • 'Consultation from October to December 1997 • Launch of a model of the Grid early in 1998 • Managed services for the Grid should be available from Autumn 1998 • All schools, colleges, universities and libraries should be connected to the Grid by 2002' (Great Britain. Department for Education and Employment, 1997: 3)	A Government Consultation Paper written by the New-Labour Government in 1997 detailing plans for creation of the National Grid for Learning which was announced a year prior.

London: Stationery Office.		
BECTA (1998). *Connecting Schools: Networking People: ICT Planning, Purchasing and Good Practice for the National Grid for Learning*. BECTA: Coventry.	The non-departmental public body (or quango) BECTA was funded by the government and produced this book to describe 'Good practice' for ICT planning under the National Grid for Learning.	This document discusses how to succeed in the new National Grid of Learning and is positive about attracting business interests, contrary to some research in prior years.
Great Britain. Department for Education and Employment. (2001a), *Schools: Building on Success*: London Stationery Office.	This is a Green Paper and as such was produced as a government report for discussion and debate.	Green Paper detailing proposals for inclusivity and diversity by 'transforming' schooling. Written by the Labour Party and describing their agenda at this time.
Great Britain. Department for Education and Employment. (2001b). *Digital TV and the*	This was a press release from the Department for Education and Employment.	This paper describes how digital resources will not replace but enhance teaching and learning in schools.

Internet to help pupils, press release 2001/0190, 2 April.		
Great Britain. Department for Education and Skills. (2001). *Schools: Achieving Success*. London: Stationery Office	This is a White Paper and gives a stronger government viewpoint but still leaves room for debate.	This White Paper discusses the ability to monitor individual performance and was chosen because of its close link to the Foucauldian concepts used for analysis.
BBC (2002). *Digital Curriculum service* (London, BBC).	Provided as an online service for both schools and homes, the BBC was given the ability to spend £150 million of licence fee funding over a five-year period.	This service was an important curriculum guide for schools and homes and was backed up by the European Commission's decision in 2003 to 'raise no objections to the scheme' (European Commission, 2003).
Great Britain. Department for Education and Skills. (2005). *E-learning strategy*. London: Stationery Office.	This online publication from the Department for Education and Skills was made available to the public through the website http://dfes.gov.uk/publications/e-strategy and has since been removed. The document is available on web achieving services.	This document details how to use e-learning tools effectively. Of particular note is the mentioning of keeping 'old methods' of teaching by modernizing them with digital tools.
Great Britain.	Presented to the Secretary of State by the Teaching and Learning in 2020 Review Group who were	A report to the Secretary of State

Department for Education and Skills. (2005). *2020 Vision: Report of the Teaching and Learning in 2020 Review Group*.	'asked to establish a clear vision of what personalised teaching and learning might look like in our schools in 2020' (Great Britain. Department for Education and Skills, 2005: 3)	from the Teaching and Learning in 2020 Review Group. A document full of predictions of what the writers expect teaching and learning will look like in 2020.
Great Britain (2010). *Academies Act 2010*. c. 102. London: The Stationery Office.	Available from the Government's website as listed above, this Act was an important step for private entities who wished to take over so-called "failing" schools. The Act itself was followed by another Government website which gives more information on how head teachers/principals could apply to register their schools as academies.	This Education Act, designed by the Conservative-Liberal Coalition, introduces Academies to the United Kingdom allowing private entities to take over schools.
Great Britain (2011). *The Education Act 2011.* c. 96). London: The Stationery Office.	As above, this act was followed by a more user-friendly website that gave documentation to anyone who wanted to open a Free School. Currently the Free Schools application website is still open and can be found here: https://www.gov.uk/government/publications/free-school-application-guide	The Education Act, introduced under the Conservative-Liberal Coalition, allowed for the creation of Free Schools.
Great Britain. Department for Children, Schools and Families. (2012). *Click Clever, Click Safe, The first UK internet safety strategy*.	This document was created by the The UK Council for Child Internet Safety, and commissioned by then Prime Minister Gordon Brown (Great Britain. Department for Children, Schools and Families 2012: 2). Bringing together '140 organisations and individuals' (ibid.), the main purpose of this document was to inform schools on safe practices to teach children when online. Parents or caregivers who may not be digitally literate are the target audience for this, as the document is sprinkled with quotations from primary school age children detailing their greater knowledge on technology matters around the home. The document is designed to be read by parents and caregivers as it often addresses them directly. It is likely that the plan was to disseminate this to households through the school system or inform parents/caregivers through meetings at the school.	Billed as 'the first UK Child Internet Safety Strategy', this document addresses a portion of digital literacy that students should know.

Great Britain. Department for Education. (2013a). The national curriculum in England: Key stages 1 and 2 framework document.	This document, and the one below, are both available from the Department of Education's website and are designed for heads of primary schools and teachers.	The National Curriculum framework document for primary schools Key Stage 1 and 2. It outlines a new dedicated Computing class which marks the first of its kind.
Great Britain. Department for Education. (2013b). Statutory Guidance: National curriculum in England: computing programmes of study.	This document is designed to meet the computing needs of students as laid out in the National Curriculum framework document above. It is for heads of schools and teachers of computing programmes that would have been hired to fill the newly opened positions and gives supporting details as to what objectives students are expected to meet at the end of such a course.	As above, this document continues to introduce guidance on how to effectively implement the new Computing classes and requirements in 2013's National Curriculum.
Great Britain. Department for Education. (2014a). The national curriculum in England: Key stages 3 and 4 framework document.	As with the primary school National Curriculum framework document, this is available on the Department for Education's website and describes changes to the curriculum for secondary schools.	The Secondary School counterpart to the above Primary School National Curriculum for 2013. This document outlines Key Stage 3 and 4 and is used to demonstrate what students of this ability are expected to achieve after two Key Stages of Computing.

Great Britain. Department for Education. (2014b). National Curriculum and assessment from September 2014: information for schools.	Accompanying the above, and also attached to the same webpage as the Key Stage 3 and 4 National Curriculum framework document, this guide gives heads and teachers information on new assessments and information related to the National Curriculum in 2014 (DfE, 2014a).	The companion guide for the Key Stage 3 and 4 National Curriculum framework document. It has been chosen because of the new assessment information presented to schools.
UKForCE. (2014). 'Submission to Maggie Philbin's Digital Task Force'.	Available from the UK Forum for Computing Education's website, this report was made available to all political parties and was a response for Maggie Philbin's Digital Task Force's call for evidence on the state of digital literacy in the UK.	This document, cited in the above House of Lords report, gives four categories of digital literacy skills. From a non-user to content creators, it is possible to categorise a teacher or student. This categorisation is linked to the Foucauldian analysis.
Great Britain (2014). *Government Digital Inclusion Strategy*.	This document aptly opens with the phrase 'This is for everyone' and is intended to be a call to action and description of planned changes to 'equip the whole country with the skills, motivation and trust to go online, be digitally capable and to make the most of the internet' (UK, 2014). The document also states: 'that is why the Digital Inclusion Strategy sets out 10 actions that not just government but also partners from the public, private and voluntary sectors will take to reduce digital exclusion. The government and Go ON UK, the digital skills charity, will jointly lead a cross-sector partnership focused on delivering these actions that mean, by 2016, we will have reduced the number of people who are offline by 25%. And we will continue to do this every 2 years. If we succeed, by 2020 everyone who can be digitally capable, will be' (ibid.).	This policy paper is about 'reducing digital exclusion' and is the Conservative-Liberal Coalition's answer to presumed barriers to entry into the digital world across the country.
Great Britain. Select	Designed by a House of Lords Select Committee on Digital Skills, this report is worded as a plea for the other Government departments and the Commons to consider the alleged skills gap that is	A document by the Select Committee on Digital Skills to the

Committee on Digital Skills. (2015). *Make or Break: The UK's Digital Future*. *Report* HL 111, 2014-2015. London: By the authority of the House of Lords.	opening up between the UK (as a whole) and other countries. This document is available online at https://www.publications.parliament.uk/pa/ld201415/ldselect/lddigital/111/111.pdf.	House of Lords detailing what the UK needs to do to better compete in the world on the digital front. This report is 'call to action for the incoming Government in May 2015' and contains hyperbolic language and warnings to force the government in a different direction. As such it is linked to the analysis section: Chapter 5 – Findings.
Vaizey, E. (2015). 'The Government's response to the House of Lords Select Committee Report on Digital Skills', Presented to Parliament, July 2015.	Finally, then Education Secretary Ed Vaizey drafted a response to the House of Lords document above listening the Government's plan. It is not known if this plan will continue in light of the mid-2016 cabinet shuffle or the United Kingdom's withdrawal from the European Union which is to be concluded by 29th March 2019.	The response to the House of Lords Select Committee Report on Digital Skills details what the Conservative government (as of the general election of 2015) wishes to do to address the issues presented by the Select Committee.

4.6. Conclusion

In this chapter, the relevant literature has been critiqued, frames the history of digital literacy for the Findings in Chapter 5 and informs the Research Questions in Chapter 2. The use of Foucault's concepts has been explored, along with explanations as to why his tool-kit (Allen, 2012; Walzer, 1983: 481) approach is preferable. Foucault has also been compared to his contemporaries – Habermas and Bourdieu – in order to demonstrate that while additional literature and social theories are understood, they do not fit the topic of the research given their unsuitable components, or identified flaws that make Foucault the more logical choice.

The challenge of defining digital literacy has also been addressed, along with close up, medium-shots, and long-shots of more and less relevant articles pertaining to historical, contemporary, and predictions of technology use in education from the past. Student and teacher opinions and requirements were also noted, giving a broad scope of the many ways technology has affected the involved actors and education.

Foucauldian terms were selected to aid the policy analysis and answer the Research Questions from a Foucauldian perspective. These address the discourse of education at the time the policy was written, the disciplining techniques used by those with power to normalise dissent, and a modified and traditional view of The Gaze and Panopticism as it applies to the digital in the past, present, and future.

In the next chapter, the Methodology is discussed in more detail, specifically relating to the above Foucauldian techniques and how the Findings section (Chapter 5) is to be arranged and analysis conducted.

Chapter 5: Findings

This chapter is split into sections correlating to the research questions in Chapter 2. For ease of reading, they are:

1. "How has digital literacy been defined and implemented by policy steering?"

2. "What have been the effects of policy suggestions and decisions on practice?"

3. "How has research influenced policy decisions?"

Throughout this chapter the Foucauldian devices (Chapter 4) are used as tools to assist in answering the above questions.

Many of the components incorporated into the term known today as 'digital literacy' (Chapter 3) arose out of the mid to late 90s with the introduction of more user-friendly operating systems. From here, computer literacy was gradually enriched and moulded by the inclusion of newly available technologies such as search engines, always-on broadband connections, and increasingly mobile devices such as laptops, phones, and tablets. Most importantly, a shift from stand-alone systems to a social and networked society helped develop the communal and behavioural aspects of what is now included under the heading digital literacy.

Moving closer to the present day, we see an expanding definition of digital literacy. It was during the early 2000s that broadband Internet was fully available to most online users. The closing years of 2000 saw the move towards handheld devices once again becoming prominent in the average person's life through the rapid advancements in mobile phones. These increasingly popular devices have only recently been utilised inside and outside of the classroom.

5.1. Identifying Approaches to Digital Literacy and Policy Steering

As I described in the Introduction (Chapter 1), I was born into the era where computers were becoming affordable household devices, and my parents purchased one on the assumption that it would assist with my learning. Internet access, if available at all, was limited (for economic or technical reasons) to a sluggish 56 kilobits per second dial-up connection well into the early 1990s. Computers in education were limited to simple, (by contemporary comparisons), often DOS-based (Disc Operating System) 'education games', (edu-tainment) - both entertaining and learning focused – loaded onto the computer through the means of a floppy disc and a command-line (using the keyboard to type instructions into the computer as opposed to using a mouse to point and click through a pre-made 'wizard' install helper). While MacOS and Windows changed the command line interface (CLI) for personal computers to a graphical user interface (GUI) from 1984, persuasive attempts from academics (Suppes, 1966; Papert, 1980; Stonier & Conlin, 1985: 10) were selected (or not) on a school by school basis (Watson, 1993; Stevenson Committee, 1997). Therefore, to reiterate, much of what we currently think of when discussing 'digital literacy' was not to be found in 80s policy documents, but was realised rather haphazardly in schools, according to individual school choices, finance and skill sets up to the mid-90s. There can, however, be a discussion on the discourse regarding computer usage (See Foucauldian-based Question 1, Chapter 3), along with an introduction to the National Curriculum. To help understand the discourse leading up to 1988's introduction of the National Curriculum, I suggest we need to recognise the historical context of technology in education from the years prior.

With technology finally approaching affordability on the scale required to implement mass school-wide adoption, the mid to late 80s saw technology integration as synonymous with modernisation, individualised student-centred learning, and, most importantly, the ability to raise achievement levels through cost effective measures (Somekh, 2000: 20; Webb 1987). As 'microcomputers were transported into classrooms in large numbers and at some speed' (Beynon, 1993: 8), a mutually beneficial arrangement took place, as mentioned in the Literature Review (Chapter 3), where computer manufacturers worked with the Government to increase production (Beynon & Mackay, 1989). This in turn gave the Government the much-needed rejuvenation of schools for the contemporary era (Selwyn, 1999: 80; Somekh, 2000: 21). Hardware support, being the obvious first step, was pushed greatly through the initial Microelectronics in Education Programme from 1980-1986 – a £32 million investment – followed closely by the Micros in Schools Schemes in 1981-1984 – a £15.1 million investment from the Department of Trade and Industry (Somekh, 2000: 21). This latter initiative subsidised the purchases of computers by schools. Finally, from 1983 to 1987, the Employment Department's Technical and Vocational Educational Initiative gave £240 million (ibid.) for a radical change in educational policy to give students more vocational training in schools (Dale, 1991; 2011).

The hardware spending, and what has been described as the 'dumping of machines on schools' (Beynon & Mackay, 1989: 249; Selwyn, 1999: 80) continued with little positive effect on the education system, mostly because the reasons for using them were thrust upon the schools not by educators, but by industry and government (Barto, 1996). It has, however, been argued that teachers' careers have been affected for the better 'at the micro level' (Beynon & Mackay, 1989: 247) as more

resources were available, and new positions created in anticipation for the technology revolution (Sikes, Measor & Woods, 1985). Researchers towards the end of this decade held that the introduction of technology undermined teachers themselves, or their methods. Baker (1985) believed that it was a simple task to sway teachers into believing supposedly harmful practices, in the sense that it was negative to their teaching, or cause them to neglect their own abilities. This idea came from the computers of the time being unable to interact in a meaningful way with students; a concept which is explored further in Chapter 6 – Suggestions for the Future. Apple (1986) stated that some teachers strove to add a 'glamorous' charm to their subjects in order to fascinate students – through the use of new-fangled technology, of course. Beynon & Mackay reasoned that:

> It is not irrelevant that the technology has been introduced at a time when teachers' and educationalists' attention has been focused on other pressing issues – contraction, cuts, industrial action, curriculum changes and privatization amongst them (1989: 247).

This gave the impression of a decent attempt to explain the failure to launch into cutting edge IT-based lessons, but when have these attention-grabbing disputes not been on the educator's mind? Certainly, while the British economy was faltering in the 80s, in the decades after this, schools had not addressed Beynon & Mackay's concerns (1989), or perhaps deeming them trivial, applied full attention to the latest and greatest technology. Fred Jarvis, then General Secretary of the National Union of Teachers (NUT) in 1987, requested that more assistance was given to teachers so that a more 'technological articulate population' (Webb, 1987) arise, seemingly accepting the benefits of technology in education but blaming the 'difficult circumstances' (Beynon & Mackay, 1989: 247) in which teachers struggled to go about implementing it. To researchers of the same mind as Beynon and Mackay, the

lack of criticality on the usefulness of IT in education was emblematic of the problems met by schools:

> The vast bulk of the literature on IT in education […] is prescriptive, [and] uncritical. [It] lacks a critical dimension (1989: 246).

On top of this they suggested that 'ethnographic, classroom based studies of the uses of IT in education' (ibid.) were required, and, perhaps more importantly, that the research on IT in education be related 'to the broader context of IT, the state and the economy. IT in education cannot be divorced from this broader context' (ibid.).

Other researchers such as Meighan and Reid were more optimistic about the effects of computers in the classroom:

> We might see, as a result of the new technology, not the final realization of the classrooms of the 'brave new world', more impersonal than ever and raised to a new peak of instructional efficiency, but schools in which the traditional goals of a liberal education – the development of wisdom, judgement, active intelligence and civic responsibility – are taken seriously (Meighan & Reid, 1982: 358).

A rather hopeful and ideological statement indeed, but worthy of note as demonstrable of how some researchers thought the future of education would change, even six years before the National Curriculum was introduced. As well as researchers, the Shadow Cabinet, being the Labour party at the time, fully backed the push and insisted that:

> Rapid technological change […] will affect most, if not all, of Britain's workforce. That is why our future prosperity depends on education and training of a high standard to meet new and unforeseen circumstances. We must seize the immense economic opportunities contained in advanced technologies by producing "high-tech" goods and services. That means making a much bigger investment in high-tech education and training at all levels (in Linn, 1985: 58).

Labour, in 1997, would have their chance to revolutionise the education system as they saw fit, but it should be noted that at the time, this was no different to the ruling Conservative Party's stance on technology (Webster & Robins, 1986) and a big reason why researchers wished for more criticality in its effectiveness. Both the Labour and Conservative parties held the same discourse of truth (Foucault, 1994: 128).

Major government policies implemented during this era to 'lever' technology into schools included the Microelectronics Education Programme (MEP), which was designed by a Labour administration but implemented by the ruling Conservative government (Beynon & Mackay, 1989: 248). The MEP spanned from 1980 to 1986, where it had managed to generate £23 million in funding – ten times greater than that of an earlier large government initiative titled the National Development Programme in Computer Aided Learning (NDPCAL) (ibid.) – until the MEP was replaced by the Microelectronics Education Support Unit (MESU). Whereas the NDPCAL was essentially limited to colleges and universities (O'Shea & Shef, 1983; Hooper, 1977; MacDonald et al, 1975; Kemmis, 1978), the DES-funded MEP focused on secondary schools. By the introduction of the National Curriculum, the MESU merged with the Council for Educational Technology (CET) in London which created the National Council of Educational Technology, or NCET. The NCET is discussed in more detail in the next section, but to draw back to the Literature Review (Chapter 3), and the definition of digital literacy, an issue from the MEP that was carried over from decade to decade into the present day was the lack of a strong grounding in exactly what was expected of students and teachers:

Nowhere did the MEP define the scope of computer literacy, or of computer studies in schools; and nor do manufacturers discuss these points. Is computer literacy

merely using a tool with skill, or is it concerned with understanding the technology and its uses (Beynon & Mackay, 1989: 248)?

Dearing would later describe that placing IT skills was ‘at the heart of the [National] Curriculum’ (Dearing, 1993: 28), in an effort, no doubt, to increase standards by changing persuasive measures to compulsive ones (Griffen and Davis, 1990; Selwyn, 1999). The National Curriculum, as mentioned in Chapter 3, Subsection 1.2.2, was put into place to standardise the teaching across the country. Through this centralisation of what was to be taught came the ability to assess students, and from here the process of examination (Foucault, 1979: 190) could begin, with learners more easily being placed into society based on their past performances at school (p. 190, 214).

While the National Curriculum was set to initiate advancement of IT skills in the early 90s for 16-19 year olds as the centre of the six vocational skills students should know (National Curriculum Council, 1990; National Council for Vocational Qualifications, 1991; Selwyn, 1999: 81), the aforementioned push for hardware in schools had supplied most with computers at the expense of training teachers to use them (MacDonald, 1989). This, coupled with a lack of studies by the Department of Education and Science evaluating the new technology usage all throughout the 1980s (MacDonald, 1992; Somekh, 2000: 23) seems to have demonstrated that the discourse surrounding IT usage was simply to supply schools with the technology and let them handle it – until the National Curriculum was established, at least. Nevertheless, the National Curriculum proceeded for four years with digital literacy skills being evaluated by one researcher as a risk to other knowledge: ‘there is a danger that core skills will become part of the “phantom curriculum”’ (Lawson, 1992:

91) because it was seemingly no-one's responsibility to integrate IT skills into the rest of the subjects taught in the traditional curriculum (Selwyn, 1999: 81).

In the late 80s and early 90s, computer use in schools was almost entirely hardware-focused. As such the policies from government involved working with companies to boost the fledgling British computer industry and, most importantly, demonstrate to the public that schools were keeping up with the times. Lest schools were to look dated, they were given funding to purchase the latest hardware, but few teachers were offered the training needed to fully utilise it in the classroom, and often this went against government policies elsewhere when reforming the curriculum:

> […] the National Curriculum itself is a strengthening of the traditional academic curriculum. This combined with a limited view of the role of non-specialists, new parental pressures on schools, a lack of resources for equipment and staff, and the subject traditions that are still in practice embedded in Department of Education thinking, means that [technology] changes will be slow (Capel, 1992: 56).

I would not describe the government's slow adaptation and school adoption rates as 'normalising techniques' (Chapter 4). Instead, it simply appears that most subjects relied on business as usual while the government in this decade used the hiring and firing of groups who promised the most audacious results as a sort of punishment and reward. The 'Digital Gaze', however, was not yet possible, as technology would not be advanced enough for reliable measurements of usage for another two decades. This means that, at least in the 80s, a focus on privacy and literacy regarding the core component of online safety was not a large concern. This was not the era where every student had a user account, could be monitored with tracking cookies through web browsers, or even had more than a few hours' computer exposure per week. Likewise, the 80s and early 90s are missing many of the components of what I, and other researchers described in Chapter 3 as 'digital

literacy', and I suspect that most people in the country would fall well into the Digital 'Muggle' (UKForCE, 2014) or, as I prefer to call it, 'Beginner', were they to be retested under the standards put forth by Hague & Payton (2010).

From 1997, with the government changeover from Conservative to Labour, new policies on IT usage and knowledge began to emerge. Aiming for the target of all schools, including colleges and universities, being connected to the Internet by 2002, the Labour government set up the National Grid for Learning, or NGfL (Great Britain. Department for Education and Employment 1997). This policy was described as:

> a framework for a learning community designed to raise the standards and improve Britain's competitiveness, and which embraces schools, colleges, universities, libraries, the home and the workplace (BECTA, 1998).

With this came Information and Communications Technology or ICT, and a new 'mandatory prerequisite for newly qualified teachers to gain Qualified Teacher Status' (Selwyn, 1999: 81) by demonstrating IT Literacy (Great Britain. Department for Education and Employment 1997). Newly qualifying teachers would have to meet the government approved standards for 'IT Literacy', as little as they may have been in 1997, or face the punishment of not being a government-sanctioned and licenced teacher. As the 'IT revolution' (Great Britain. Department for Education and Employment 1997: 25) was on its way, those without the skills risked being labelled as unable to adapt to '21st century' 'learning' (ibid.). While in previous decades, the obsession with technology was indeed known as 'techno-romanticism' by some (Beynon & Mackay, 1989: 245), there can be no doubt that an information revolution was beginning, though it took until at least 2001 to be truly transformative – in the sense that for the first time, the Internet was 'always on' for the average user – and began with the widespread implementation of broadband Internet. This increase in

data speeds and bandwidth fuelled the rise of video streaming and content heavy websites. Nevertheless, the discourse continued to change in the favour of the pro-technology camp, with naysayers being criticised as technophobic, a typical normalising (Jardine, 2010: 7) technique, despite their overall agreement that technology is an overall benefit to the economy. Such was the episteme – the conditional requirements necessary to render such discourses of truth. That is, technology was continuing to improve, thus creating the conditions necessary for a discourse of criticism of such tools as backwards and fearful. In a conference to the British Educational Research Association, Scrimshaw (1998) expressed that the NGfL was designed to control teachers and their practice through the creation and propagation of guidance documents and 'teaching materials' (Somekh, 2000: 22) yet it was also using vague language that simply promised large improvements. This objectifying of teachers (Jardine, 2010: 8) removed much of the ability to choose materials and best practices. The use of guiding documents, often through private companies and professional organisations would become a common staple throughout the 2010s and, as with that time period, could be seen as a gentler way of pushing a specific educational agenda through the re-education of instructors to the *new* ways of teaching.

Beginning in February 2001, the Department for Education and Employment under the then Labour government released the Command Paper "Schools: Building on Success" (Great Britain. Department for Education and Employment, 2001a) explaining how the direction of education was to change, giving as is explained further on, a more useful backing of technology in the classroom. The policy document's front page footer boasted: 'raising standards, promoting diversity, achieving results'.

The initial claims from this document begin with Chapter 1 – Transforming Education, in which the Labour party states:

> We will encourage innovation, enable schools to use information and communications technology to transform teaching and learning and model the school of the future (Great Britain. Department for Education and Employment 2001: P. 16).

This opening statement shows how pro-technology the Labour party was at that point in time, leaving no room for doubts as to the direction that learning was to take. The paragraph is developed, giving the following details:

> The application of ICT is transforming business processes in every sector of the economy, both private and public. It is beginning to have a similar impact in education. Indeed, in some schools, the transformative power of ICT has already been unleashed. Many of the case studies in this document are testimony to that.
>
> The next challenge is to extend the benefits of ICT to all schools, while creating a culture in education which encourages innovation and therefore constantly challenges inherited attitudes and approaches in the pursuit of higher standards.
>
> To achieve these goals demands investment in infrastructure and in digital resources. But technology is only a tool: the key to innovation is teachers and other staff with the confidence and skills to exploit its potential to transform the learning process and motivate children to learn. Just as importantly, schools, often working together, must have the freedom to innovate and the confidence to do so (P.16).

This paragraph demonstrates how the focus of Labour's government was to take advantage of the growing influence of computers in businesses sectors as a reason to develop technology usage in schools. Moreover, schools were even to challenge 'inherited attitudes' (p.16), which probably referred to how teachers and head teachers believe classrooms should be run, as will become apparent in later analysis of this document. The initial paragraph of this quotation hints about previous successes that ICT is already having on the schooling environment and education,

but only in ‘some schools’ – those being the case studies that are embedded throughout the document. The discourse of this document relies on the acceptance of the benefits of technology in education. That is at least what appears to align with Labour’s understanding during this time. Consider, however, the multitude of voices questioning the benefits of technology in education during that same period (Facer et al., 2001; Selwyn, 1999). A quote from the British Educational Supplies Association demonstrates the objection of the marginalised (Jardine, 2010: 12):

> There’s little point in buying a cart if you haven’t got the horse to pull it and the analogy sums up the downside of Labour’s otherwise successful drive to equip schools with new technology. In the early days companies supplying the hardware would very often package up training for teachers as part of the purchase or license price. But when Becta [sic] drew up its approved lists of suppliers and products it emphasised the need to keep prices as affordable as possible. Suppliers, needing to keep costs as low as possible to get on the lists, came under pressure to leave out or reduce the training element and leave it to schools or local authorities (BESA, 2015: 8).

The response is perhaps not what the government would have hoped for, at least judging by these studies. Also consider, as I mentioned before, that this Command Paper was only written in February 2001 – a time before the widespread adoption of broadband Internet to the population of the UK. Though the phrase ‘digital literacy’ had been in existence at this point for the last four years (Gilster, 1997), and coincidently, the year when the Labour Party took office, the emphasis is not on these identified skills (Chapter 3). Research cited by the Department for Education and Employment in this paper (2001a: 32) includes the British Educational Communications and Technology Agency (BECTA)’s study on Key Stage 2 computer training at the time. A case study is linked from Horton Primary School, which explains what the government expected students and teachers to understand about technology:

> Since September, the new [ICT] teacher has used new networked computers […] to train groups of up to 16 children in the essentials of the new technology. Children from the 4 schools are taught together. With expert advice, the schools have already invested in an impressive range of software and equipment – including digital cameras, scanners and a CD writer. Now the school would like to develop video conferencing facilities and make links with schools abroad (Great Britain. Department for Education and Employment 2001a: 32).

As before, we find an 'investment' in hardware rather than giving students the skills to be digitally literate (Chapter 3). Though the ability to network computers together began the collaboration portion of the digital literacy definition (Hague & Payton, 2010). It should be apparent from the analysis thus far, and further towards the present, the successive governments of United Kingdom were thoroughly behind the curve, compared to industry and the outside world, when it came to implementing digital literacy policy. As Green and Hannon (2007: 11) attest, those known as 'Digital Pioneers' or 'digital makers' were '[performing these tasks] before the phrase[s] had been coined'. Indeed, if anything can be taken away from this it is that true innovation, as is the goal of successive policy from government departments, never comes from the government legislating it.

Both teachers and schools are mentioned in the Command Paper, as teaching itself is upgraded to 'A 21st Century Profession' (Great Britain. Department for Education and Employment, 2001a: 64). It is here we see the initial steps to normalise technology as a teaching practice through the use of punishments and rewards for teachers and schools:

> continue to increase rewards for teachers to reflect their key role in society with substantial new investment in performance pay between 2002 and 2004 (ibid).

The aim was to build upon the suggestions made in the Green Paper: *Teachers: meeting the challenge of change* (Great Britain. Department for Education and Employment 1998)

> New technology can add new dimensions to lessons, improving both effectiveness and presentation […]. Pupils' capacity to undertake independent research is being dramatically enhanced. Pupils' homes can be networked to schools. Teachers, through interactive technology, will be able to teach their traditional lessons to pupils not just in one location but several. […] None of this is wishful thinking: it is already beginning to happen (Great Britain. Department for Education and Employment 1998).

The government in 1998, and again in this 2001 Command Paper, put their focus on 'digitising' the curriculum, rather than giving students the skills identified in the Literature Review (Chapter 3) as associated with digital literacy. It could be argued that it was not their intention to do such a thing, which becomes apparent upon reading the policy documents from this era, and is no wonder why many scholars, as mentioned above, attacked the use of technology as simply replacing one tool (offline lessons) for another (online ones). At the beginning of the 21st century, the government was more concerned with giving teachers a networked platform to discuss ideas (Great Britain. Department for Education and Employment 2001a: 76), a technology that had been in existence since 1993 in the form of email, and 1988 in the form of Internet Relay Chat (IRC), if one wanted to force teachers to use such early methods of communication. Instead of empowering learners with critical skills to utilise the newer technologies available to them in their homes, which would fall under the definitions established for digital literacy in Chapter 3, resources were drawn to 'lesson planning tools' to help teachers prepare for (mostly offline) classes (Great Britain. Department for Education and Employment 2001a: 76), boasting about how technology was going to 'reduce bureaucratic burdens on teachers' and

the hiring of technologically educated ‘classroom assistants’, though no qualification requirements are mentioned (Great Britain. Department for Education and Employment 2001a: 77). The ‘best teachers’ (ibid.) – that is, those who can pass the inspectors’ (Foucault, 1979: 185-187) testing and procedures, would be promoted to Advanced Skills Teachers (Great Britain. Department for Education and Employment 2001a: 73) and paid over double that of Newly Qualified Teachers, and £10,000 over that of Senior Managers (Great Britain. Department for Education and Employment 2001a: 77). This document closes with an echoing of the previous Conservative government’s sentiment on how ICT has already offered benefits to ‘many sectors of the economy’ and that technology will serve to make teacher’s lives easier (Great Britain. Department for Education and Employment 2001a: 81), though it is admitted that ‘it took some time for the impact of [previous investments] to be noticeable’ (ibid: 76). Again, we find that researchers were very unyielding about this point, even questioning why students had not taken to using technology in schools despite having access to it later on in this decade (Selwyn, 2011a).

A few months later, in September of 2001, the Department for Education and Skills released a White Paper as a follow up to the previous document entitled *Schools: achieving success*. It is from this point that direct objectives are stated which lead towards some of the established digital literacy characteristics. For example, after restating the government’s continued monetary investment in infrastructure, the government’s *Curriculum Online* paper introduced a ‘tool kit’ for use inside classrooms which embraced newer technologies such as ‘interactive whiteboards, PCs, and digital television’ (Great Britain. Department for Education and Skills, 2001: 23, paragraphs 3.26 – 3.27). It should be noted, however, that efforts were on supporting teacher lesson planning, with a vague allusion to ‘support[ing] homework

and family learning' (Great Britain. Department for Education and Skills 2001: 23, paragraph 3.27) for students, and how advancing digital technologies meant 'that schools that are distant from one another can also collaborate' (Great Britain. Department for Education and Skills 2001: 39). Much of the confusion surrounding technology usage during this era was spawned from conflicting outcomes: bolstering the old ways of teaching versus innovating with the new (Selwyn, 2007: 229). For example, the BBC, who were involved in creating a *Digital Curriculum* stated that they:

> […] do not seek simply to transfer the structure of traditional teaching to an online environment, but instead to create an online space, in which students discover and explore concepts in innovative ways (BBC, 2002: 3).

This is contrary to the above policy documents already mentioned by the previous Conservative governments and the New Labour government during this time. Additionally, the 'old' way of teaching was to be upheld using 'digital educational aids tailored specifically to the National Curriculum' (Cassy, 2002: 26), to provide 'more efficient ways of keeping in touch and giving feedback on students' progress' (Great Britain. Department for Education and Skills 2005, 2), and that 'digital resources will not replace but will enhance traditional and tried teaching methods' (Great Britain. Department for Education and Employment 2001b).

At this time, the possibility to monitor performance of schools was increasing in its ease of application:

> We now have an accountable schools system where we can monitor individual school performance and intervene in inverse proportion to success (Great Britain. Department for Education and Skills 2001: 41).

As a clear example of a government lever, schools who complied with the government's objectives of success were rewarded:

> Within that framework we can now allow schools more autonomy so that well-led schools take more responsibility for themselves (ibid).

It was suggested that schools who were very successful could 'opt out of elements of the National Curriculum', mostly at higher Key Stages (Great Britain. Department for Education and Skills 2001: 42). In some ways, this would have become a pseudo-privatised system with those who obeyed the rules being released from certain obligations while still under The Gaze (Foucault, 1979) and normalising techniques (Foucault, 1990).

Central to this document, is the concept of innovation, which as was noted above, and backed up by Fairbairn-Day below, was initially more concerned with technology physically being in schools instead of what was important to get out of it:

> In the beginning there was too much emphasis on putting technology into the hands of teachers and pupils because it was visible and made a good impression. [It] was very much on the hardware and not on the objectives and what you were trying to achieve with it. The good intention was there but, with the benefit of hindsight, some of the decisions that were made were not necessarily the best ones and some of the spending on technology was misplaced (BESA, 2015: 12).

It is important to expand towards the wider, international perspective, as England, while inside the UK, and creating certain laws, does not exist in a vacuum. The call for digital literacy – though not always called this – is a major concern to the wider European Union as a whole. As a supranational entity, the European Commission has a drastic impact on the policies crafted, debated, and passed in England. One such document from 2003 entitled *eLearning: Better eLearning for Europe* proposes, promotes, in far greater detail than the Labour party, the goals of the European

Union. Four priorities are described: 'Promoting digital literacy, helping the deployment of European virtual campuses, twinning schools via the Internet, and promoting and monitoring of the eLearning Action Plan' (European Commission, 2003: 3). The European Union's push for digital literacy, or more specifically, the grandiose objective of: '[bringing] every citizen, home and school, and every business and administration online and into the digital age' (ibid.) would have pushed the Labour government into using this term and influencing policy in the years to come. The European Commission, in this document, properly identified the errors of the past. While they do not specifically refer to the UK as an example, it is clear that the problems mentioned had to be addressed by the respective EU nation states. Specifically, the following critique is important to note, to which I have added emphasis in bold:

> ICT is not a solution in itself and as this has become increasingly clear the issue of quality has come to the top of the e-learning agenda. Many early attempts at e-learning were unsuccessful, as **they did not adequately consider either the needs of the user or the nature of what was to be learnt**. They often isolated the learner and provided little or no opportunity for social interaction. In many cases **they dictated the learning process offering little flexibility and no possibility of individual adaptation**. The early days of e-learning were characterised by a lack of adequate content and services – both in the field of educational software, and in the larger field of cultural and media resources (European Commission, 2003: 6).

The highlighted text demonstrates the key issues that the Labour government faced before this, and even years after as policy failed to address the problems identified by the European Commission in the early 2000s. Not only was technology thrust into classrooms under the broad name of 'ICT', but the decade old concept of what it means to be digitally literate was not considered on a national policy level, limited only to academics and researchers, many of whom, as mentioned in the Literature Review (Chapter 3), were often not consulted.

From the middle of 2010, the government change from Labour to a Conservative-Liberal coalition sparked the beginnings of a drastic change in how education in England was conducted. Michael Gove, Secretary of State for Education from 12th May 2010 – 15th July 2014, and current Secretary of State for Justice, began promoting what he believed to be fixes to the education system, including the controversial privatisation of failing schools under the new Academies scheme (Great Britain, 2010), Free Schools were introduced (ibid.; Great Britain, 2011) which were given public funding but with no obligation to follow the still existing National Curriculum. These schools are reminiscent of what Labour from 1997 to the mid-2000s were attempting to encourage, though there were no specific targets a school had to hit to gain its independence from the government. While these new schools do not have to follow the National Curriculum, core and elective subjects taught are still basically the same as other schools as the entire point is to pass the standardised GCSEs or A –Levels. Deviations, therefore, are in the majority likely to be on a micro level, not a macro one.

For the remaining parts of this section, documents assessing the digital literacy situation are compared, followed by a consideration of the National Curriculum for 2013, and finally an up to date analysis of the current curriculum is produced from the time of writing. A shift from the older IT subject to a new Computing subject was completed from 2014 onwards with substantial funding from the Department for Education to professional organisations in the hopes of aiding primary teachers. Therefore, many of the documents discussed below focus on the primary level.

In September 2013, the Department for Education released a further updated National Curriculum Framework for Key Stages 1 and 2. This document, which focuses on primary schools, and in keeping with the running tradition of National

Curricula thus far, fails to include anything about digital literacy. The traditional core subjects remain front and centre, with numeracy and mathematics being laid out clearly as a skill where 'teachers should use every relevant subject to develop pupils' mathematical fluency' (Great Britain. Department for Education, 2013: 9) and language and literacy earning the same respect: 'Teachers should develop pupils' spoken language, reading, writing and vocabulary as integral aspects of the teaching of every subject' (ibid.: 10). The notable absence of *digital* literacy skills demonstrates that the government, even after almost 30 years of promises, was still not articulating a commitment to provide children with the skills they need to compete in the 21st century.

Instead of an overarching focus on digital literacy skills, the Gove-led initiatives continued momentum towards a new subject – Computing – which in the past existed only at Key Stage 4 for 'A' Level students. The purpose of this class seems to be an attempt to address concerns regarding digital literacy skills but focused on a single subject. For example, the Department for Education agrees that:

> A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems (Great Britain. Department for Education, 2013: 178).

The overlapping themes of this computer science class with the broader characteristics of digital literacy are declared, though no mention of digital literacy itself is included. The aims of the course declare that students should:

> [be able to] evaluate and apply information technology, including new and unfamiliar technologies, analytically to solve problems' and '[be] responsible, competent, confident and creative users of information and communication technology (ibid.).

This fits in with the creative and critical requirements identified in the Literature Review (Chapter 3) of what constitutes digital literacy. What it does not do, however, is address anything other than the computer science side of the equation. I am relieved that the government has finally become aware of the importance of computer science, but there is nothing new about this specific class that could not have been included in the National Curriculum since its inception in 1988. After all, the hardware was available from the early 90s, and programming, which is the government's intention, only requires a computer to see the finished product – the "code" can be written by hand and checked and debugged by a properly trained instructor. This is particularly apparent when one observes the initial aim of the subject:

> [pupils] can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation (ibid.).
>
> [pupils] can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems (ibid.).

These aims, after all the recent advancements in technology, might appear quite unambitious. The aspects of digital literacy, after some time, are being taught as students go through Key Stages 1 and 2 (DfE, 2013: 179), but the relegation of these skills, which are absolute necessities in the modern world, to a single isolated part of the curriculum, as opposed to embedding Digital Literacy across the curriculum, seems to demonstrate that the government did not understand, or purposefully ignored, how technology underpins so much of our everyday lives, especially in the area of text production and consumption practices.

The National Curriculum for Secondary students (Key Stage 3 and 4), created in September 2013 also and updated for December 2014, similarly includes nothing about digital literacy. Core subject goals remain the same as before with mathematics and language and literacy as 'integral' across all subjects (DfE, 2014a: 9-10). Building on skills attained through the previous Key Stage 1 and 2 computing subject, students are to continue improving their knowledge of computer science (DfE, 2014a: 85-87) with the same aspects of digital literacy that were previously discussed from the primary curriculum.

Following on from 2012, a shift began to occur in which learned societies and professional organisations became more involved in assisting teachers, particularly at the primary level, in the use of technology in classrooms. These initiatives were connected with, or funded by, the Department of Education, allowing educated professionals outside of the government to draft documents promoting the effective use of technology not just in computer science classes, but throughout the entire curriculum. Some examples are given below to illustrate the current resources available to teachers.

First, and demonstrating the ongoing issues present in the new curriculum established by Michael Gove and by his successor, Nicola Ann Morgan (since 15 July 2014 until 14 July 2016), is a document which accompanies the primary National Curriculum, compiled by Naace and Computing At School (CAS), in collaboration with The Chartered Institute for IT. The document, entitled *Computing in the National Curriculum: A guide for primary teachers* attempts to fill in the gaps established by the National Curriculum Framework. Its aim is to provide primary teachers with an explanation as to why ICT was dropped and how the new subject,

computing, will be better. The document opens by explaining why ICT was useful to schools, a phrase of which I have highlighted:

> Primary teachers currently equip pupils with **high-level skills** in using ICT, preparing them to apply these across the curriculum in secondary education (Naace, 2014: 4).

The very next line of the same paragraph, however, seems to cast doubt on the previous claim:

> It's unclear whether pupils leave primary school with much knowledge of how computers, software, the internet, the web and search engines work, or a critical understanding of the impact of these technologies on their lives and on society (Naace, 2014: 4).

Perhaps a distinction is being made between 'ICT' and the rest of those skills. It could be that the ICT examinations – GCSEs and 'A' Levels – do not currently test for these abilities. In which case the government would likely need to include some sort of standardised assessment test for these as is currently conducted with Mathematics, Science and English. A logical follow-through of making digital literacy a core subject would be that it enjoys parity with the existing core subjects, standardised testing included. Doing this would also open up more Foucauldian issues, however, such as the categorisation of students in the National Pupil Database which currently stores the aforementioned core subject results for all students.

An additional comment by a teacher raises an important issue that has thus far been overlooked:

> As teachers, we are competent and confident users of technology in our own personal and professional lives, and yet relatively few of us are sure how the software running on our computers works, what the difference is between the

> web and the internet, or how search results are ordered, and we're even less sure of how to teach these things to pupils (Naace, 2014: 4).

Teachers in England must receive Qualified Teacher Status (QTS) before they can teach in schools. QTS is therefore the government stamp of approval conferring this right. It is not unrealistic to expect that teachers approved by the state are able to teach all the state-mandated subjects. Yet above, we see a discrepancy between teacher-approved standards and what is expected of teachers later in their careers. It would be unfair to blame teachers for not being trained 'correctly' – they have been approved after all and understand their subjects well enough to pass first a degree with high honours and secondly a teaching qualification. A gap is present between what the government says it wants and what is tested for in the field. Teachers of this nature may be subject to the same normalising techniques – the punishment and rewards – mentioned in the Literature Review (Chapter 3). These teachers too may be forced to "upgrade" their skills, as it were, to teach the classes, despite being approved to teach in the first place.

A decade prior to this, the European Commission commented that the role of teachers as the 'knowledge authority' was 'in danger' (2003: 19), stating:

> […] teachers act more as learning guides or take on the role of learner, tutor, collaborator, developer, researcher, lifelong trainee and team member. Teachers are accepting that students might do better in special fields and are ready to learn with and from them.
>
> As tutor, new roles include acting as a modeller, coach, and "scaffold" (guide and mentor) (European Commission, 2003: 19).

There is not necessarily anything wrong with a change in the role of the teacher, and a move towards independent student-based learning would help to create self-reliant, autodidactic and knowledge-craving students, free to explore on their own.

This goal becomes problematic in combination with the previously acknowledged difficulties teachers have keeping up with advancements in technology and the reliance on outside organisations to bolster technology usage. It has, however, been recognised that while home-based usage of technology is a mainstream practice amongst young children, their use of technology for the pursuit of knowledge can be lacking (Selwyn, 2011a).

Returning to the current National Curriculum, a benefit of utilising one class for teaching computer-based skills is that only instructors trained in that field would be required, rather than importing computer science into all other subjects across the curriculum and forcing teachers who know little about it to learn. This new legislation, however fails to address the need for cross-curricula digital literacy knowledge. Perhaps this is because of the myriad reports, either academic or otherwise, that downplay – or reveal – the digital literacy knowledge that teachers have. The government, however, seems to have picked the worst of both situations.

The Naace document goes on to describe how the new curriculum makes a clear split between computer science, informational technology, and digital literacy (Naace, 2014: 5) yet even in the Statutory Guidance document (DfE, 2013b) for the new computing subject, the phrase ‘digitally literate’ is mentioned only once, and ‘digital literacy’ is not mentioned at all. The Naace (2014) guidebook makes a distinction between these three separate expectations, but includes the note that:

> […] the statutory requirements are not labelled under these three headings in the programme of study, and the distinction between information technology and digital literacy is open to some interpretation (2014: 6).

With the requirements being so lax, open to interpretation, and judged on a school by school basis (ibid.: 14), with in-house assessments (p. 23), it is likely that little will change for the better even with the curriculum's new focus on programming. From the perspective of surveillance scepticism, as has been my position throughout this study, the break away from the norm of government monitoring and checks is promising, but introduces new issues. For example, with focus on a government-controlled Panopticon, teachers without training or knowledge in this area may overlook the private sector, particularly when using Google or Microsoft products. E-safety is, as always, an important concern, but remains limited to warning students from a young age about putting too much information online instead of educating teachers about the many privacy concerns they overlook in their daily digital lives (EDRi, 2015). Livingstone et al.'s (2015) classification of online risks (p. 3) is a step in the right direction, but putting into effect the safeguards contained within, those of monitoring for aggression, sexual, values, and commercial risks, requires educating teachers also to the possible exploits of the online world. Though it should be said that this has the ability, as with many other requirements of knowledge, to aid in controlling students and teachers using examinations (Foucault, 1979: 184, 185-187).

From September 2014, the Department for Education released a short document entitled *National Curriculum and assessment from September 2014: information for schools* (Great Britain. Department for Education, 2014) which, as the title would suggest, introduces the updated 2014 National Curriculum for schools. The document consists mostly of assessment reforms and Key Stage changes with a single paragraph update on the computing subject:

> A master computer teachers' network is being developed across the country.

> BCS Academy of Computing has a programme to help primary school teachers, with no prior experience of computer science, get ready for the computing curriculum.
>
> Computing at School, in association with Naace and other partners have published resources including a guide for primary school teachers (DfE, 2014b: 3).

In the first and second sentences, ‘master computer teachers’ network’, is hyperlinked to the Computing at School (CAS) website, which, under the guidance of experts from the BCS Academy (Academy of Computing at the Chartered Institute for IT), is working to provide support for teachers nationwide and is currently pushing for a GCSE in computing. They are also funded by the Council of Professors and Heads of Computing, and private corporations such as Google and Microsoft. Presently the link only pushes users to the homepage of CAS, where they have to navigate through the website to find the correct page. As the document is almost two years old at the time of writing, it is unlikely to be fixed before another variation of the National Curriculum emerges. Ironically, teachers would require many of the digital literacy skills on offer through the website in order to locate documents in the first place.

It was my opinion at the beginning of my research that one subject or course is simply not enough to address the issues with digital literacy that England faces. After all, for decades two subjects, albeit poorly executed, were already running for all pupils in schools: ICT and later an A-Level in Computing offered by certain secondary schools and sixth-form colleges, which had failed to deliver the required results, possibly due to their elective status. As of 2015, attention has finally been put on the need for a core requirement for children to master digital skills. To analyse this, it is time to return to the document presented in the Literature Review (Chapter 3), the House of Lords – Select Committee on Digital Skills (Great Britain. Select

Committee on Digital Skills, 2015), which appears as a last-ditch effort to demonstrate to policy makers the importance of digital literacy. This is established in the title “Make or Break: The UK’s Digital Future”. The use of this language seemingly denotes desperation and a genuine fear that England (or the UK as a whole, as England technically is represented by the British Government) will be left behind on the world stage of digital progress. I first referenced this document in the Literature Review as the go-to for defining digital literacy, and this is the definition I have been working with throughout the research.

After the initial definitions of digital literacy and the categories the citizens of the UK would fit in, the Committee suggested how the government should react. The following paragraphs are taken from the section entitled ‘Making it happen’ (Great Britain. Select Committee on Digital Skills, 2015).

Stating that the government should ‘act as the “conductor of the orchestra”’, the Committee notes that while the above described funding of programmes for teachers was helpful, the government’s ‘efforts would be more effective if they were better coordinated’ and ‘[they] need to take responsibility for leading the UK through the seismic changes brought about by changing technologies’ (p. 13). To this end, five recommendations and nine objectives are stated.

> Recommendation 1: ‘The Government should develop an ambitious “Digital Agenda” for the UK: at its heart should be the Government’s vision for the UK to keep up with the best leading digital economies across the board in five years’ time’ (p. 94).

This initial recommendation is not surprising given the last 30 years of policy decisions, with Karen Price of the Tech Partnership disclosing:

> […] There is confusion in the marketplace; every school is bewildered, employers are bewildered, and we could get so much better value if it could sit within a national framework (p.91-92).

Indeed, this should be within the realm of the National Curriculum, though as mentioned above there is little inclusion of digital skills outside of the newly introduced Computing subject. My third research question (Chapter 2) queries the effects of research on policy. In 2015, it seems that researchers are having an effect, but the main issue now is that 'there are too many things going on' (p.92) for schools, teachers, students, and parents. Thus, the call for the government to step up and take charge is one of necessity for focus rather than a lack of useful platforms from which to spread digital literacy skills. The offloading of government control to multiple sources – professional bodies and private corporations – has fractured the movement for new technology skills and resulted in the confusing state of affairs today. The typical educational powerhouses often mentioned, that being Finland, Singapore, and Sweden (p.90) all have centralised government plans in place regarding their 'digital agenda' (p.13), which give credence to the push for a more unified UK (as a whole, rather than just England – although Scotland would have to approve separately) policy, despite the aforementioned countries' economic and social differences.

> Recommendation 2: 'This Digital Agenda should be the responsibility of a Cabinet Minister in the Cabinet Office, who would assume ultimate responsibility for driving the Digital Agenda across all Government departments' (P. 94).
>
> Recommendation 3: 'The responsible Cabinet Minister should evaluate the UK's Digital Agenda on a regular basis, seeking to drive the UK's digital competitiveness. The Minister should report to Parliament annually against the measures within the Digital Agenda. We recommend an initial progress report to Parliament by summer 2016. We note that a similar practice is already undertaken by the Scottish Government' (P.94).

As I mentioned, many documents are designed on behalf of the entire United Kingdom, describing the UK as a whole instead of the devolved parliaments of Scotland, Wales, and Northern Ireland. It is interesting to see here that the report notes Scotland is ahead of the rest of the UK. As to recommendations 1, 2 and 3, Ed Vaizey, then Minister of State for Culture, Communications and Creative Industries (from 14 May 2010 to 15 July 2016), as designated minister assigned to this task, wanted to respond to the call by summer 2016, as requested (Vaizey, 2015). Vaizey also, in his speech to Parliament, commented (ibid.: 3-5) on all recommendations put forth by the House of Lords Select Committee (Great Britain. Select Committee on Digital Skills, 2015: 13-14). Vaizey noted that:

> [...] the Government recognises the scale and importance of the challenges that must be addressed, and the need for far-reaching ambitions that will have sustainable impact. To achieve a truly digital economy, we need to work in partnership with industry to create the right conditions for every individual and business to be able to profit from the benefits of technology (Vaizey, 2015: 3).

The quick response was positive, though continued to lack the specific details that the original demands warranted. Statements such as: 'The Government is committed to not only "keeping up" with the best leading digital economies, but being a thought leader in this space' (ibid.) lack the strong foundation and organisation that, in my opinion, are required. In an interview with Computer Weekly, Sarah Morgan, the chair of the House of Lords Select Committee on Digital Skills stated she was 'underwhelmed' with the response (Bateman, 2015), which leads me to believe that in terms of Research Question 2, the government is still not acting as comprehensively as possible to the genuine need for leadership in this field.

With Recommendation 4 from the House of Lords report relating only to the organisation of a committee, we are left with Recommendation 5, which requests the

government respond to, and create, their own objectives on how it wishes to move forward. (Great Britain. Select Committee on Digital Skills, 2015: 94-95).

In response to this, the government included a list of commitments for the near future:

1) Roll out universal broadband and better mobile phone connections to ensure everyone is part of the digital economy;

2) Ultrafast broadband should be available to nearly all UK premises as soon as practicable;

3) Invest in infrastructure to give the most comprehensive and cheapest superfast broadband coverage of any major European country;

4) Delivering superfast broadband in urban and rural areas to provide coverage to 95% of the UK by the end of 2017;

5) Subsidising the cost of installing high speed-capable satellite services in the very hardest to reach areas;

6) Release more spectrum from public sector use to allow greater private access;

7) Holding mobile operators to their legally-binding commitment to ensure that 90 per cent of the UK landmass will have voice and SMS coverage by 2017;

8) Continue to invest in mobile infrastructure to deliver coverage for voice calls and text messages for the final 0.3-0.4% of premises that do not currently have it;

9) Ensure the UK is a world leader in the development of 5G and plays a leading role in defining industry standards;

10) Fit out trains with new Wi-Fi equipment in England and Wales;

11) Provide free Wi-Fi in libraries and ensure remote access to e-books without charge and with appropriate compensation for authors that enhances the Public Lending Right scheme;

12) Roll out cross-government technology platforms such as GOV.UK to cut costs and improve productivity while actively tackling digital exclusion and ensuring digital assistance is always available for those not online (Vaizey, 2015: 6-7).

As of 2016 it is unclear if these promises will be fulfilled, and as they pertain to the future of technology, they are addressed in Section 5.5 below using the Foucauldian framework identified throughout this Chapter and the Literature Review (Chapter 3). One should note, however, that not a single promise listed above has anything to do

with education, but rather falls back into the same hardware focus that plagued the country throughout the 80s and 90s. The government may be attempting to bolster technology access to the clear majority of people, hitting the inclusion targets for poorer or technologically deprived households, but this only addresses Objective 1 of the House of Lord's document: 'The population as a whole has unimpeded access to digital technology' (2015: 14) rather than, what would be more useful, Objective 2: 'The population as a whole has the right skill levels to use relevant digital technologies' (ibid.).

This subsection has shown selected government policy documents and recommendations were, throughout the years, leaning strongly on the narrative that computers were beneficial for education. The usage of policy steering and particularly policy levers is apparent from the continued interference in schooling by policy makers through the categorization of pupils and staff which resulted in a designed usage of computers rather than an organic, hands-off approach that developed outside of schooling through market forces. The initial focus on hardware rather than software and professional development in the 80s and early 90s resulted in a backlash from researchers and criticisms of the usefulness of technology in education. In recent years, the government has increased its push for digital skills in schools for teachers and students alike. As of 2016, however, there seems to have been little done to improve the country's international rankings. The 'Modernisation' movement of the past has returned in another form, 'mak[ing] or break[ing]' the UK's digital future (Great Britain. Select Committee on Digital Skills, 2015). Time will tell if more of the same policy steering will be effective at lifting England and the rest of the United Kingdom out of its purportedly hazardous digital quagmire.

5.2. Effects of Policy on Practice

While section 5.1 discussed definitions and policy steering, this section analyses the immediate effects of policy on practice inside the classroom. It is noticeable that computers being thought of as a panacea to all of schooling's ills was the dominant narrative and thus a major policy lever. Not only were computers presented as the solution to all student motivation problems (Beynon & Mackay: 1989: 249) but also to bolster national standing around the world (Adamson & Kennedy, 1986) and to return power back to parents and students, matching the Conservative government's rhetoric of helping oneself and allowing for more effective auto-didacticism (Hall & Jacques: 1988). It has been observed that without an understanding of how to use such technology for one's own scholastic betterment, students will likely have a hard time getting the most out of the technology for that intended purpose. This can be supported by at least two studies on higher education students who, according to some researchers (Prensky, 2001a; Oblinger, 2004; Rainie, 2006), should have been through the education system taking advantage of technologies that were unavailable prior to the late-80s, when this study begins, or even some decades later. The first is an Australian university study by Ng (2012) in which 'Digital Natives' (Prensky, 2001b) were tested on their digital literacy skills:

> […] undergraduates were generally able to use unfamiliar technologies easily in their learning to create useful artefacts. They need, however to be made aware of what constitutes educational technologies and be provided with the opportunities to use them for meaningful purposes (Ng, 2012: 1065).

The second, from Scotland, also with undergraduates, showed that while using a limited range of available tools, there was no 'evidence to support popular claims that young people adopt radically different learning styles' (Margaryn, Littlejohn, and Vojt, 2010: 429).

While being an avid computer user who falls into the more adept categories of Digital Literacy as described in Chapter 3, during the 1980s, it would have seemed naïve of me to push hard for learning using a computer alone, or even heavily prioritising computer-based activities. Computers at that stage in their progression were, unsurprisingly, incredibly primitive compared to today, and were I to be writing this back then, I may have agreed wholeheartedly with Baker when he said the following:

> A teacher can react to the individual needs of pupils with regard to ability, attitudes, sex, cognitive development, cognitive skill, motivation and mood. The computer is barely able to account for any of these (Baker, 1983: 209).
>
> Current use of the microcomputer may be a step backwards in terms of language development and communication skills (Baker: 1985: 449).

I may also have been opposed to the 're-shaping of education by the industrial lobby, within a populist framework' (Beynon & Mackay: 1989: 255), were I to see it as a combination of poorly thought out policies and private corporate agenda.

Likewise, teachers should know how to use educational-based technology in order for it to be useful for students' edification (Papert, 1980). Without a strong foundational understanding, they risk losing their own voice in the teaching process, or as was Apple's concern in 1986:

> Instead of teachers having the time and the skill to do their own curriculum planning and deliberation, they become isolated executors of someone else's plans, procedures and evaluative mechanisms (Apple, 1986: 162).

Worse still was the creeping threat of a new style of Panopticon (Foucault, 1980: 148), as I introduced in Chapter 4, always watching, and even identified as a threat back when the MEP was first being implemented, as Lawn and Ozga (1981) warned

of the possibility of IT being used to monitor teachers, removing control of 'content and pedagogy of teaching' (Baynon & Mackay, 1989: 250). This is on top of the contemporary practices of painting teachers and school administrators as technophobic, out of date, Luddites (Webster & Robins: 1986) if they failed to fall in line with the required assistance for economic well-being (Webb, 1987). While we in 2016 understand that the technology of the early 1980s was far too primitive to fully monitor and control teachers and students, it is curious that the IT-sceptical researchers were already concerned with the surveillance that the future may bring. Certain applications from the 90s through to the time of writing have been so far limited to the teacher observing the students using screen capture technology, where the students are not quite sure if the teachers are watching. This would mirror the Panopticon concept, but in the digital, as behaviours of students change when the authority figure may be looking over their shoulders.

With more focus on implementing technology into classrooms rather than merely implanting hardware and expecting teachers and students to bolster existing practices with the technology, the classroom culture began to adjust. Power, and with it, teacher identity, became the chief modifications as instructors reconsidered their place in the classroom. An established concept at the time is explained by Jackson, in which the teachers focus on 'achieving and maintaining student involvement in […] activities' (Jackson, 1968: 162) whereas students learn to live with 'delay, denial, interruption, and social distraction' (ibid.). Students were thought to often 'exchange performance for grades' (Doyle, 1979) with much of the classroom activities involving little real learning (Somekh, 2000: 26). It is through technology, Somekh stated, that the burden of 'supervisory responsibilities' are reduced thereby allowing students to take control of their own learning, initiating the

teacher to shift into the 'role of facilitator of learning' (ibid: 26). An aversion to a shift in educational culture such as this may have been responsible for the overall failure to implement such classroom dynamics throughout the 90s and beyond. Perhaps the lack of assessment (Beynon and Mackay, 1989: 245) on the usefulness of technology, and its emergence as a 'panacea' for all education-based problems (ibid.) caused some backlash in the teaching community, grinding integration to a halt. To elaborate, consider the concept of 'self-identity' described by Giddens (1991). Giddens states, with added emphasis from myself:

> Self-identity […] is not something that is just given, as a result of the continuities of the individuals' action system, **but something that has to be routinely created and sustained in the reflexive activities of the individual**. […] Self-identity is not a distinctive trait, or even a collection of traits, possessed by the individual. It is the self as reflexively understood by the person in terms of her or his biography (Giddens, 1991: 52-53).

Given that 'conflicts between self-narratives and the possibilities and challenges available may offer new ways of being' (Burnett, 2011: 436), it could be considered that, perhaps, with time, teachers would master new techniques through reflexive activities and practices. Foucault (1982; 1988: 18) describes how identity is restricted by available resources, thus building one's image into the desired form is not entirely within one's own control. Consider, however, a resistance to this, brought on by a changing discourse (Foucault, 1994: 128) of teachers not being the overriding knowledge source in classrooms, a struggle against the loss of expert status, and being 'frequently less knowledgeable than their students about the technology itself' (Somekh, 2000: 28). Without the motivation to create this new identity, teachers may have been caught between an ideology they did not support and a slow but ever creeping normalisation of the new skills – those based on technology – that would punish or reward (Foucault, 1990a) based on how well the poorly understood targets

were achieved. Or to put it another way, the ‘relative invulnerability’ (Giddens, 1991: 40) that was created by years of established teaching methods were, and to an extent in the modern era are, still under threat, with traditions ‘characterised by a sense of risk’ (Burnett, 2011: 436).

Having said that, there are many teachers who are open to change, but lack the confidence or knowhow to fully integrate technology in their classroom. Examples of how these attitudes are addressed can be found in Subsection 5.4, where the government from 2010 onwards focused on ‘upgrading’ schools and teacher skills to the proclaimed ‘21st century’ standards of computer science knowledge.

From 2000 onwards, it is possible to discuss Foucauldian-framed privacy concerns to their full extent, as this period marks the start of true personal computing for students in schools where students were assigned accounts and could be monitored. Until 2000, it was uncommon for schools to utilise multiple computers or a computer room with separate user accounts for each student. This was a matter of the software catching up with the curriculum, not one of school budgets as identified in the 1980s. User accounts for each student gave rise to the need for monitoring software, utilised by the teacher, and enabling them to remotely scan for students who deviated from assigned tasks, which were utilised on a per-school basis. With this came numerous privacy concerns for the student, and with multiple permission levels, for the teacher as well. The “digital gaze”, as was explained in Chapter 3, will be an instrumental tool in the analysis of privacy issues, as this relates greatly to fulfilling the requirements of ‘digital literacy’ as set out by Hague & Payton (2010).

Until at least 2003, policy did almost nothing to foster digital literacy skills, confining what little support there was to initiatives sponsoring ‘pure hardware provisions’

(Selwyn, 1999: 81) or using technology as a political tool for public approval. This was despite the widespread adoption of computers and the Internet in society at that time and the overwhelming government support for innovation and modernisation. Therefore, it is unlikely that policy decisions and suggestions made by the various governments during this period had much effect on student usage of technology as they were already using such devices outside of the classroom. Despite all government intervention, there has been little to stop the next skills panic witnessed at the highest levels of government (Great Britain. Select Committee on Digital Skills, 2015). Instead, teachers have been the ones whose skills have been called into question over the past three decades, prompting more calls for further development and training opportunities for teachers.

This section has analysed the effect of policy on practice. Despite the broadening of the definition of digital literacy since the introduction of the National Curriculum in the 1980s, and the redefining of the role of the teacher, little progress has been made regarding classroom practice. Students, who outside the classroom were adapting to the ever-changing technological landscape, had few opportunities to use technology for their learning in schools. Responsibility for this rests on the curriculum falling short of the potential digital competencies that could have been achieved using available technology. Additionally, the pushback by teachers concerned that their identities in the classroom were being eroded (Burnett, 2011: 447) may have contributed to an assumed lack of technological prowess on their part by policy makers. While this is often not the case, the combination of the above elements has resulted in multiple calls for action throughout the years; the House of Lords Select Committee on Digital Skills being the latest. Researchers have also called into

question the effectiveness of further computer-based integration, and this is the focus of the next section and final research question.

5.3. The Influence of Research on Policy

To answer the third research question, the focus must now turn to how researchers have affected policy choices and recommendations. It should be kept in mind that governments are freely able to ignore researchers, pick and choose research that fits an agenda, or simply commission researchers who will report favourably on a policy pronouncement. This was, as stated above, the case with 1980s policy initiatives (Somekh, 2000: 23). Keeping with the chronological theme, this section observes how researchers responded to policy choices and how their findings were represented in continuing government decisions.

In the 1990s, the education sector saw many false starts and hindrances in the implementation of technology. These issues are widely documented (Selwyn, 1999) and involved, as mentioned in the Literature Review, the lack of usage by students and teachers over the decades. Yet despite this, it was a time of critical research studies conducted by the outgoing Conservatives and incoming Labour in an attempt to modernise the nation. As with the other subsections of this research, a comprehensive observation of every policy document is unfeasible, and therefore attention is only given to policy that had the most influence as it relates to the research questions and analysis of digital literacy skills. For example, due to the government changeover in 1997, policies and departments were heavily influenced leading to alterations in programmes such as the replacement of the National Council for Educational Technology (NCET) with the British Education and Communications Technology Agency (BECTA).

To begin where we left off in the 1980s, the focus on hardware in schools, often avoiding research from academia, was front and centre, with primary schools increasing their average computer numbers per school to 10 in 1994 from 2.5 in 1988 and secondary schools gaining 85 on average compared with 23 over the same length of time (Somekh, 2000: 22). This began to change in the late 80s and early 90s, from avoiding evaluative studies of technology initiatives (MacDonald, 1992), to a government-funded study on 'An evaluation of the impact of information technology on children's achievements in primary and secondary schools' from 1989 to 1992 (Watson, Cox and Johnson, 1993). From this point, the Department of Education and Science continued funding the NCET, inviting researchers to create the instructional book 'IT Works' (NCET, 1994). Somekh (2000) notes that from 1993 to 1998, the NCET continued to 'build up trust' with the research community (p.23), providing evaluations for major projects (ibid.).

A recurring issue, which was not addressed by the NGfL, was identified by Herschbach two years prior to the introduction of the new legislation:

> Technological knowledge is not a type of formal knowledge similar to that associated with the recognised academic disciplines. It has distinct epistemological characteristics that set it off from formal knowledge. A deeper understanding of technological knowledge opens the curriculum to possibilities that are obscured by a more restricted view (Herschbach, 1995: 1).

In other words, with all the backing the government could muster, without a concrete foundation in understanding how computers work, the usefulness of technology will always be as broad as or, limited to the understanding of its users, whether they are teachers or students. This seemingly self-evident idea was previously identified by Striebel in 1988 in which he stated that the 'technological mentality' (p.158) of using

the then so-called IT (instead of ICT) in education is a detriment to ‘understanding and real-life intellectual agency’ (p. 158) that a student would have to computers.

The successive governments of the past three decades no doubt understood this, as their myriad of guidance documents and workshops would attest, and yet the fact remains that we still have the majority of respondents in 2014 surveys (Great Britain. Select Committee on Digital Skills, 2015) falling into categories that describe zero to limited knowledge of technology. A comment from Selwyn, an enduring critic of technology policy, during this decade described the frustration:

> […] such an [sic] holistic view [referring to a lack of understanding of computers] of computer use has been conspicuously absent in education to date, replaced instead with an overt emphasis on the development of skills (Selwyn, 1999: 82).
>
> […] if the methods used to introduce computers into the educational setting have been inconsistent, the rationales underlying the implementation of IT in schools have been equally flawed (ibid.).

As with Beynon and Mackay’s (1989) 80s commentary, those with negative views of the policies and literature claimed that they are ‘uncritical’ and ‘prescriptive’ (Beynon & Mackay, 1989: 246; Maddux, 1989; Selwyn, 1999: 83), rejecting other researchers’ arguments that simply using a computer helps with cognitive development and mental functions (Papert, 1980; Pea, 1985; Salomon, 1990). In regard to Lawson’s (1992) comments mentioned earlier regarding the ‘danger of cross-curricular core skills approach to IT’ (Selwyn, 1999: 81), the result was not, as the researcher feared, cause for concern when it came to reading literacy and mathematics skills, as they are still the main focus of the National Curriculum to this day. Perhaps, however, Lawson’s hypothesis has not truly been tested, for according to calls for policy changes, cross-curricula digital literacy has never been implemented. One

should consider, and this argument is present in the latter Subsections of this Chapter, that given the current penetration of technology in most people's daily lives, it would be quite beneficial to add digital literacy into the core skills of the newest curricula.

On a personal note, and entirely without purposeful self-aggrandisement, I distinctly remember being so far ahead of even the ICT lessons when I was at school during this era, that I could have been teaching the class. Lessons on basic website design were of no value to someone who, like my video game playing peers, had already created dozens of websites in my spare time, away from the limitations of school, and using technologies that left the National Curriculum in the digital Stone Age. As Michael Stevenson from the BBC, a company heavily involved in the new digital resources explained:

> These children are of a screen generation. They go home to a PlayStation and expect the same dynamism from a PC in school. Our products will help them experience that (Cassey, 2002: 26).

My experiences are not unique, of course – this is a well-documented occurrence where, though 'some learners feel disadvantaged by a lack of basic access to technology, others are making sophisticated choices among a range of technology-mediated learning strategies' (Sharp and Beetham, 2011: 95). Indeed, as 'conceptions, beliefs and expectations of learning are strongly influenced by prior experience' (ibid: 96), it would seem those in my group of friends who took an interest in technology and the education one could gain through being digitally literate – though we did not call it that – may have been kick started by that initial computer purchase in the early years (See Introduction, Chapter 1). This is, after all, what the Labour party was aiming for in the aforementioned Command Paper (Great

Britain. Department for Education and Employment 2001a: 32, 37) recommending Key Stage 2 ICT skills for all students.

From here we move to the private entities which receive funding from government sources and their influence on research and policy decisions.

Futurelab's 2010 document entitled *Digital literacy across the curriculum* starts by setting the 'policy context', that is, the standard rhetoric that digital literacy:

> [can] contribute to subject knowledge but seeking to develop digital literacy in subject teaching is also a way of responding to changing discourses around the use of digital technologies in the classroom and accompanying developments in educational policy (Futurelab, 2010: 14).

The authors, Hague and Payton, also reference how in the 'past decade' (ibid.) 'an educational policy drive' (ibid.) has attempted to mimic the same usage of technology for young people in schools as they have at home. Educational policy did not keep up with home-based technology usage and the authors themselves only go as far back as 2006, with heavy focus on the 2008 National Curriculum and 2009's UKCCIS 'Click Clever, Click Safe: The first UK child internet safety strategy' plan, which is discussed together on the greater general question of privacy, critical thinking, and e-safety as was mentioned in the Literature Review (Chapter 3) which is encompassed by Foucauldian concepts of The Gaze and Panopticonism.

Standard digital literacy safety training includes knowledge of:

> […] age appropriate content, concern over the predatory behaviour of adults, acceptable use and cyber-bullying or issues of plagiarism, copyright and virus protection (Futurelab, 2010: 44).

This safety component, as is found with almost all research that acknowledges safety measures online, is lacking in understanding for an additional major issue that

computer users face worldwide. It is an understanding of the Digital Gaze – the modification of Foucault's Gaze that exists within the 'Panopticon'. For example, Futurelab dedicates an entire section of its 2010 document to e-safety: giving students the digital literacy skills to 'stay safe when exploring, communicating, creating and collaborating with digital technologies' (2010: 44). To my surprise, a recommendation to move away from 'locked down ICT systems' (Ofsted, 2010), which I am assuming could include closed-source software, though it is not outright stated as such, is included. This could help assist in combatting the Panopticon issue users face as the code could be read. It would be more likely to find that Ofsted is promoting 'managed systems' (Ofsted, 2010) over others not because of the issues I address below, but because it gives teachers and students more control. The 'Click Clever, Click Safe' initiative, (Great Britain. Department for Children, Schools and Families 2012) mentioned above aligns with the standard that Futurelab cites, creating a list of instructions for students:

> Zip it – keep your personal stuff private and think about what you say and do online
>
> Block it – block people who send nasty messages and don't open unknown links and attachments
>
> Flag it – tell someone you trust if anything upsets you or someone asks to meet you offline (Great Britain. Department for Children, Schools and Families 2010).

This advice from the government demonstrates a commitment at least to e-safety and shows that awareness of the possible dangers of the Internet has reached policy makers. It is perhaps ironic that they suggest keeping personal information private, as this is precisely what has become unavoidable in the modern world of computing, at least not without enormous effort on the part of the user. Ironically the government, from Cameron to May, has been against encryption methods on

messaging applications which would assist in keeping personal data and thoughts private (BBC, 2015a). From 2007, the United States' National Security Agency launched the data-mining surveillance programme known as 'PRISM', shortly followed by GCHQ, the United Kingdom's equivalent department, creating 'Tempora'. Together with Australia, New Zealand, and Canada these countries make up what is known as the 'Five Eyes' – a worldwide intelligence alliance. The Gaze, as Foucault put it (Foucault, 1979) has never been so far reaching, nor the panoptic enclosure so wide. It can be argued these systems are used for the good of the country, at least in Government hands, and it can no doubt be seen that they are used for protection. Very few measures are in place, however, to protect children from these surveillance systems in the hands of private corporations, a lot of which work with schools to supply equipment, software, and training for teachers. Recently it was reported that the British government was trying to pass a bill to prohibit tech companies from warning users they were being spied on (Techspot, 2015). One may ask why this is relevant to digital literacy skills, but this is precisely the point. Google, a major investor in education, and primarily an advertising corporation, 'collects schoolchildren's personal data, including internet searches through the use of their Chromebooks, without the consent of the user' states the Electronic Frontier Foundation (EFF) in a report to the US Federal Trade Commission (BBC, 2015b). Without the proper understanding of e-safety and privacy concerns, students and parents have no idea any of this is happening, or why it is important. The major counterargument to these concerns is often found in a reply of this nature: 'I have nothing to hide, why should I care?', but if critical thinking, evaluation, and e-safety (Futurelab, 2010: 19) are components of digital literacy, perhaps users with these skills would care, as do many who take steps to avoid the new Panopticon that hides

within the technology we use on a daily basis. The Gaze (Foucault, 1980: 148) has been extended from the initial prisoner and medical terminology (Foucault, 1979: 171) to the digital, and has convinced many people that not only may the government or a company be watching them – as with the original prisoner/guard dynamic – but now users may not even care due to a restriction of information on the subject, or their lack of proper digital literacy skills. In Chapter 6, Suggestions for the Future, I offer some recommendations for how to fix this issue of e-safety that still exists within digital literacy as a whole.

Moving onto 2011, Burnett's study (2011) concluded that pre-service teachers at the time (those who wish to become teachers) actually have a high level of digital literacy skills, comparing favourably with the technology knowledge of the students (Burnett, 2011: 446). The question which needs to be answered here is: If these pre-service teachers grew up during the Labour-era discussed above throughout the 90s, has this had a positive impact on their digital literacy skills? If so why was there still a gap between the students' and teachers' use of new technologies? (Burnett, 2011: 446). How did these children learn more about technology than the pre-service teachers, even with training? Perhaps the 'protective cocoon' as Giddens (1991: 3) puts it, does indeed prohibit teachers from attempting new, 'unstable' (Burnett, 2011: 444) teaching practices that infringe on teacher identity (ibid.,: 447). If so, a substantial portion of the previously mentioned characteristics of digital literacy are lacking from teacher education – reflection on how technology usage in the classroom may or may not be advantageous and a break from teaching tradition. Burnett describes such reflection as:

> [It] needs to address issues of appropriateness and risk and consider the reflexive relationship between teaching identities, technology-use and multiple discourses (Burnett, 2011: 447).

A recommendation is also given by Burnett:

> This also means providing supportive contexts for pre-service and practising teachers to recognise the possible relevance and legitimacy of digital practices developed beyond education, and reflect on and rehearse new possibilities (ibid).

I would hope that policy makers, though focused primarily on the digital literacy skills of children, continue to take an interest in the professional development of teachers as was a point of concern during the Labour-era of the late 90s through to 2010 (Great Britain. Department for Education and Employment 2001a, 2001b; Great Britain. Department for Education and Skills 2001, 2005) In the last 5 years, however, this has not always been the case:

> Teachers training today are still required to pass the numeracy and literacy skills tests but no longer have to pass the ICT skills test, and the new Department for Education teaching standards (2012) which came into effect in September 2012 make no reference to ICT whatsoever (Morris, 2012: 3).

Indeed, once again 2012 saw government focus pushed towards ICT being used to 'support the teaching of core subjects – literacy and numeracy' (ibid.) rather than a wider focus on computer science (ibid: 4). It should be noted that 'digital literacy', 'ICT', and 'computer science' which Morris (2012) is referencing are all defined based on the Royal Society's (2012) definitions, which make distinctions between these three terms. The Department for Education in the same year, and under Michael Gove, pushed for larger expansions of Computer Science (Great Britain. Department for Education, 2012) in the curriculum, while apparently dropping requirements for 'ICT' skills tests at the same time (Morris, 2012: 7). With researchers describing some Teaching Assistants as 'technophobic dinosaurs' (Morris and Trushell, 2009) just three years earlier, the worry about finding suitable

teachers (Wells, 2012) is made all the worse. Fortunately, the government is not 'backpedalling on the status of digital literacy and e-confidence for teachers' at present, as Morris (2012: 7) contends – they are aware of the need for these skills (Great Britain. Select Committee on Digital Skills, 2015) – but the constant concern, year after year, appears to be stuck in a loop. The same issues are faced by successive governments resulting in little being achieved: Teachers are allegedly overwhelmingly lacking in skills compared to the students, and the students allegedly do not understand enough about the competencies of digital literacy, nor how to learn using the skills they apparently do have. Incidentally this repetition of previously answered questions was discussed by Rushby & Seabrook (2008) in their study about wasted time and research from 1980-2000. These studies may conflict with Burnett's (2011) study above, which found that pre-service teachers are doing well with technology, but it appears the consistency here is students knowing just a little more than the teacher and it reflecting badly through particular government reports and research.

Another government-funded industry solution was through the Barefoot Computing project, organised through BCS – Academy of Computing (BCS, 2014). Unlike the Computing at School initiative, there was support for the 'whole primary curriculum' for 'cross-curricula progression' (ibid.). The project has since been further integrated with the BCS Computing at School scheme, while being led and funded by British Telecom (BT) for the most part, BT's new website, www.bt.com/techliteracy, along with the de facto homepage of the Barefoot Computing, shows a large investment by the private sector, and appears to be addressing the concerns identified by Burnett (2011) and Morris (2012) by giving 'computer readiness' to teachers through workshops and the support of the Computing at School teacher network. It marks a

drastic shift from the last Conservative-run government in which purchasing hardware was the absolute priority for schools, and yet a familiarity with BT's involvement mirroring that of its influence under the last Labour government's attempts at utilising key British Telecom assets (Somekh, 2000: 23). BT's website states that the UK has the technology, but not the skills – an issue they hope to fix. The discourse on technology usage, in contrast to the 80s and 90s, is that the private sector can once again provide the solution to the digital literacy woes that hold back the country. Policy makers have created the subject, computing, and left it up to schools to seek assistance from outside sources – private corporations and professional bodies. This could be seen as an effort to cut government costs in the continuing era of austerity, but I see it as a mostly positive change for technology experts to be involved with the decision making this time around. Teachers are still being forced to change their styles and methods to match the new subject, but this is an inevitable consequence of the rapidly changing world. The government targets have been set, through the above identified National Curriculum framework documents, and it will remain to be seen how schools react to the new legislation regarding these skills. Because they are open to broad interpretation (Naace, 2014), I hypothesise that another skills gap may emerge between schools with vastly differing administrative means or economic backgrounds. This might be unavoidable, as historically has been the case in the pre-digital era, and should be taken into consideration before sweeping targets are established.

This section has analysed what effect research has had on policy decisions. Initially, research in the field was not considered by policy makers – resulting in much of the literature commenting on how government expansion of technology-based initiatives was faulty, incorrect, or not worthwhile. Thus, technology was described as a faux

remedy to the ills of schooling. In more recent years, however, the government has not only listened to the concerns of researchers, but brought in outside entities to assist with research on how best to integrate technology. These researchers are still given funding by the government, however, and as such should be critically examined by future researchers as to their impartiality.

5.4. Distant Future Policy

This section is dedicated to contemporary articles and documents describing visions for future technology policy, and thus integrates all research questions where applicable. The documents analysed below were written under different governments and as such may indicate visions that have been abandoned either by successive government changes to policy or for reasons unforeseen to those who wrote the document. Documents of this nature should, but sometimes do not, consider a variety of evidence and opinions, which are likely to remain stable even in the instances of a change of government. Schools, teachers, contemporary literature and research are all examples of the evidence to which government departments should utilise when creating documents about future suggestions, and these are more likely to remain established even after elections.

In 2006, the Department for Education and Skills produced the 2020 Vision document, which was a report of the Teaching and Learning in 2020 Review Group (Great Britain, Department for Education and Skills 2006). The document lists the ‘drivers for change’ throughout the years after 2006 leading up to 2020, based on previous trends:

> While it is not possible to predict the future with certainty, previous trends can be a guide to what is more likely to occur. There are five key drivers of change

> between now and 2020 (Great Britain, Department for Education and Skills 2006: 9).

Four of the five changes were: demographic, teachers being younger and less experienced was brought up as a cause for concern, with more ethnic diversity being a plus; social, a more liberal attitude towards society was predicted along with 'a decline in traditional family structures' (ibid.) and religious diversity and more university educated parents; economic, living standards were predicted to be 30% higher, with 'luxuries becoming necessities' (ibid).; and environmental, a greater concern with environmental threats and a responsibility to reverse negative trends to the environment.

The final driver was technological, and is of most importance to this study. Emphasis has been added to the following quote:

> The pace of technological change will continue to increase exponentially. Increases in 'bandwidth' will lead to a rise in internet-based services, particularly access to video and television. Costs associated with hardware, software and data storage will decrease further. This is likely to result in near-universal access to personal, multi-functional devices, smarter software integrated with global standards and increasing amounts of information being available to search on line (with faster search engines). **Using ICT will be natural for most pupils and for an increasing majority of teachers** (ibid.).

This document was written ten years ago to predict the state of education four years from now. On the economic part, some luxuries have become necessities of sorts, high speed Internet connections and smart phones being two examples, with the latter being used more in higher education especially as a greater number of applications (apps) have been created to diversify student interaction in lectures. It is apparent that the document was a product of the time, specifically the optimism of how technology will change the face of education and how its usage will be a game

changer in student learning styles (Rushby, 2013: 56; Selwyn, 2011). Whether this happens in 2020 remains to be seen but as technology has had 'little real impact' (Rushby, 2013: 54) on schooling so far (not necessarily education, which is separate from schooling), a grand transformation within the next four years seems unlikely.

A top priority for the government in 2006 was to have 'personalised learning' (Great Britain, Department for Education and Skills, 2006: 25), which involved flexibility in learning and teaching approaches, welcoming parents, and using technology 'inside and outside classrooms […] to enhance learning' (ibid.). The document then details the customary uses of technology that were promoted at the time and currently such as student databases, lesson creation and delivery (whiteboards, presentations), and the use of gaming and mobile phones (Great Britain, Department for Education and Skills 2006: 26). Currently students are fluent in a wide range of technology, just not for 'formal education' purposes (Rushby, 2013: 54). A concern I have from a Foucauldian perspective is the following suggestion:

> While all schools have systems for recording and reporting information about pupils and their achievement, this information is not always readily available to those who could draw on it to improve learning, namely classroom teachers, pupils, and parents. Using the new technologies to inform learning and teaching will be a priority. This should take advantage of the potential of on-line learning opportunities linked to individual learning plans (or 'e-portfolios') and information held on pupils' progress (Great Britain, Department for Education and Skills 2006: 26).

I would be wary of technology being used in this way, particularly if this system were to be used to track student 'achievement' (ibid.), likely regulated through the discourse of truth (Foucault, 1994: 128) and normalised to meet standards set up by the National Curriculum.

As a final prediction, the 2020 vision document gave examples of how technology could improve personalised learning by:

> 1. 'Broadening the range of learning material children are able to access, either guided by a teacher or as part of self-directed learning'.
>
> 2. 'Enabling quick interactive assessments, for example, using "voting" technology'.
>
> 3. 'Promoting development of a broad range of knowledge, skills and understanding in new contexts and with virtual access to experts'.
>
> 4. 'Facilitating collaboration with peers (in the same school and in other schools)'.
>
> 5. 'Increasing the variety of learning resources, software and communication tools, through new media'.
>
> 6. 'Helping schools to use a wider range of readily available resources and software to enhance learning, including making software available to children to use at home'.
>
> 7. 'Blurring distinctions between informal and formal learning – giving children the ability to choose what they learn and when they learn it'.
>
> 8. 'Increasing motivation, through pace and variety'.
>
> 9. 'Increased relevance, through greater links between children's experience of school and of the technology-rich world outside'. (Great Britain, Department for Education and Skills, 2006: 27).

Numbers 1, 3, 5, are quite vague, requiring more information before it is possible to assess exactly what the resources or knowledge the government desire are. Number 2 was already possible at the time though one would expect minimal usage of dedicated voting devices when a simple raise of the hand would suffice. I expect in time with the rise of smart phones in the hands of young people, applications with this function will be utilised more in classrooms as they are currently in university lecture halls – "Socrative"[3] is an example of such a free cross-platform application, though teachers should be suspicious of such applications unless it is possible to

[3] Socrative is a smartphone application which evolved from the older, more expensive "clicker" systems of student feedback in lecture halls. Rather than spending many thousands of pounds on expensive hardware, students can download the app and give feedback in real-time. Lecturers can also quickly update questions during lectures.

understand exactly what is happening with student and teacher information by using these apps.

Number 4 is possible today with the Google applications (or Google Apps), though these too may violate the privacy of educators and students.

Number 7 is an interesting suggestion and one which would change the balance of power (Jardine, 2010: 2) in the classroom enormously. Children often have marginalised voices (Jardine, 2010: 12) given the nature of schooling as their opinions are largely irrelevant to how education is conducted. Giving them the 'ability to choose what they learn and when' (Great Britain, Department for Education and Skills, 2006: 27) may also devolve into the illusion of choice for students if it is established that their usage of technology from the outside world (see Number 9 for this also) is not suitable for educational purposes (Rushby, 2013: 54). On the other hand, this idea may be abandoned altogether. Finally, number 8 introduces the option of pacing and variety in learning. Teaching at every students' individual speed is of course an important matter for schooling, one that may often be overlooked, and in Chapter 6 (Suggestions for the Future) some of my own tentative proposals touch on how technology could assist with this.

The government's final suggestion is that schools should have a 'whole-school system', described as the following:

> […] integrated learning and management systems that bring together all the information on pupils' progress and analysis of assessment data, and are capable of being shared with other schools and organisations (Great Britain, Department for Education and Skills, 2006: 27).

Foucauldian describes this constant and overbearing examination-style (Foucault, 1979) monitoring system that has yet to be created. Such a system could easily exist

in today's world as a centralised government database, acting as the all too well known, yet non-existent, permanent record that is used to intimidate children into normalised behaviour. Students are already being warned not to post private data on social media websites lest they 'leak' out to the public and cause harm to that individual. The same caution should be taken with a perpetual government record of all of one's achievements, and likely failings as well, that will be shared with undisclosed organisations, both public and private. It is this digital gaze, introduced in Chapter 3 (Literature Review), that digitally literate individuals ought to resist, lest the already existing disciplinary acts of power (Foucault, 1979: 176-7; Jardine, 2010: 10) be used to objectify students and 'reduce and coerce them into becoming only what is already known and approved about them' (Jardine, 2010: 53).

Finally, the current government have created a policy document entitled 'Government Digital Inclusion Strategy' (Great Britain, 2014). Current problems are identified such as how many people are still unable to use the Internet because of disabilities, lack of funds to support such an expense, or issues related to traditional literacy skills. In fact, the government estimates that 10% of the population will never be able to gain 'basically digital capabilities' (Great Britain, 2014) which leads us back to the initial definition of what it means to be digitally literate (Chapter 3), and the 'digital muggle' (UKForCE, 2014) category appears to take on its original meaning of terminal ignorance to technology. To assist with these issues, the government's plan is as follows:

> stopping activity that adds little or no value, including fragmented government spending
>
> providing greater support to those initiatives and organisations that make a difference
>
> creating the environment for better, stronger joint working between people, business, charities and public sector (Great Britain, 2014).

The government also identified four main challenges faced by people who currently do not go online:

> access - the ability to actually go online and connect to the internet
>
> skills - to be able to use the internet
>
> motivation - knowing the reasons why using the internet is a good thing
>
> trust - the risk of crime, or not knowing where to start to go online (Great Britain, 2014).

The goal is to fix these issues by 2020 so that everyone who 'can be digitally capable, will be' (Great Britain. Select Committee on Digital Skills, 2015: 14). Is this a necessary goal, though? By the government's own admission, when asked what 'the most important reason' for not being online is, 62% of people say that they are 'not interested' (Great Britain, 2014). Could it be that, as with decades past, the digital agenda is being used as a cure-all for the country's ills? After all, we are seeing documents with intimidating titles such as the House of Lord's (Great Britain. Select Committee on Digital Skills, 2015) 'make or break' – implying that the UK will be thoroughly broken if we do not get everyone using technology in the way the governments of the world desire. Perhaps these digital muggles are taking a healthy opinion of scepticism towards technology as some researchers (Selwyn, 2011) suggest? With 36% of people concerned about privacy (Great Britain, 2014), it is little wonder those who believe themselves not competent enough or just have no interest are staying away. The timeframe for this policy was set for completion in 2016 with its effects set to influence 2020s life. At that time, it will be apparent if any changes in direction have resonated through society.

5.5. Conclusion

In this section I have analysed digital literacy policy, though often not referred to as such by policy makers, from the 1980s to 2016. I have also included some speculative articles and documents as to the predicted state of technology usage in the future. Throughout the chapter, policy and practice have been examined through a Foucauldian lens by answering the Foucault questions identified in Chapter 3 (*Literature Review*). Also addressed through Chapter 3 and this Chapter were the first of the three Research Questions (Chapter 2), with the fourth and final question being discussed in Chapter 6 (*Suggestions for the Future*) by building on the *Literature Review* in Chapter 3 and this policy analysis. It was discovered that discourses of truth regarding the importance of technology often remained stable over the last 3 decades, with technology being thought of as a net good at worst and a panacea for education's ills (Beynon and Mackay, 1989: 245) at best. Normalising techniques used to judge and classify teachers often revolve around a shared understanding that older generations are capable of less adept technology usage and therefore lack some components of digital literacy when compared to their students who are alleged to be more proficient overall. This understanding is not always due to a reading and acceptance of articles with concepts such as Prensky's (2001a, 2001b) Digital Natives and Immigrants, but could simply be inductive reasoning. For example: young people are exposed to new technology more than adults, therefore young people are far more skilled with these technologies in all instances. Students were also judged to a standard, often the opposite of teachers – that being undoubtedly skilful with technology – and classes were designed based around this assumption.

The marginalised voices throughout the analysed period were consistently those teachers and researchers who spoke against the established discourse of the overarching benefits of technology. This is chiefly found in the earlier years, the 70s, 80s, and early-90s, where the pro-technology side of the debate held the most influence.

Finally, contemporary digital tools have changed, either through purposeful design or not, to fit the Gaze and Panopticon concepts. It is extremely difficult now for students to avoid being monitored without their knowledge through the computer systems they use. To avoid such monitoring requires conscious action from them. It is also common to be aware that computer systems are tracking and recording details of everyone's online activities without them knowing when and where this may be happening. This Panoptical situation, according to Foucault, shapes a person's behaviours. Nevertheless, little is being done to inform students of these kinds of monitoring and control systems, especially from private corporations who are increasingly present in schools (e.g. Google Apps, Microsoft Windows). This is important because surveillance techniques going digital means that no longer are students limited to the watchful eye of a human but instead, a never-tiring machine that can catalogue and sort people into the prescribed categories and influence lives based on targets a government may set. For example, the complex data sets collectively known as 'Big Data' involve massive amounts of information which are analysed by machines and can be used for beneficial (tracking the need for additional graduates in certain fields and accepting more new students) or hostile (collecting a user's 'digital footprint' – tracing one's online activities – to keep track of the citizenry) intent.

In the next chapter, I offer suggestions for the future of digital literacy teaching using the identified Foucauldian devices in Chapter 3.

Chapter 6: Suggestions for the Future

Throughout the previous chapters I have avoided speculating that technology was the path I had chosen because the speed in which changes occur has been shown to catch researchers off guard. The *Literature Review* touches on Somekh's (2000) predictions at the turn of the century, predictions which in hindsight, ended up seeming far removed from how things turned out, despite making perfect sense to her at the time. The problem with predictions is discussed in 6.2 below from a Foucauldian stance with 6.1 recapping research questions.

6.1. Moving Forward

In Chapter 2, I laid out the Research Questions, which for convenience I provide again here:

Question 1:
"How has digital literacy been defined and implemented by policy steering?"
Question 2:
"What have been the effects of policy suggestions and decisions on practice?"
Question 3:
"How has research influenced policy decisions?"

When addressing Question 1, it is difficult to find a majority consensus on exactly what digital literacy means. This will need to be solved in the future as calls for teachers to be trained in new skills ought to first detail exactly what teachers should know and this should be agreed upon by at least government policy makers. At the time of researching and writing, a heavy emphasis was placed on Computer Science in both primary and secondary schools. This is only one part of digital literacy, as identified in Chapters 3 and 5, and could possibly neglect other skills that children need outside of the programming field. Digital literacy being part of the core skills, as

suggested by the House of Lords' report (Great Britain. Select Committee on Digital Skills, 2015), would change the way schools, teachers, and parents think about the necessity to learn these skills and place its importance alongside Numeracy and English. If such a transformation in the categorising of digital skills takes place, I expect another overhaul of the National Curriculum and inevitable call for, and research into, training teachers in these skills to keep up with demand. In this case I am more pessimistic as the entire UK does not rank highly on traditional literacy (reading) skills in international assessments. The Organisation for Economic Co-operation and Development (OECD)'s Programme for International Student Assessment (PISA) results (OECD, 2012) from 2012 place the UK at 23rd out of 65. This score can be interpreted two ways: the first is to say that there is a long way to go for the UK to catch up with the rest of the world; the second is to look positively and comment that it is above average. When it comes to digital literacy skills the narrative of urgency surrounding keeping up with the world is not likely to take being outside the top ten well. Can the demand be met for teachers with the required skill set? Without a major overhaul of teacher education, I am unsure. It can also be said that international assessments and standards are flawed as specific localised contexts are ignored in favour of providing an across the board standardised metric. It may be that the UK's needs are being met in a way that is not measurable without deeper studies than assessments such as the PISA provide.

Question 2, when placed into the future tense, remains to be seen, but this closely relates to Question 3, which asks if policy makers are taking research into account. Yes, on a lot of occasions, the government considers the available research (Somekh, 2000: 23). This is contrary to the past in which much of it was ignored. I would suggest that the government also observe the writings of those researchers

who do not find technology to be the panacea to educational woes as it is often thought of being. The alarmist attitudes of the 1970s and 80s are still going strong, lest our children are left behind on the world stage, and this ought to be carefully evaluated against the backdrop of genuine educational needs and available resources in the form of accessible budgeting for both teacher training and equipment, particularly for rural areas.

6.2. Future Predictions and the Need for Awareness

As mentioned in the introduction to this section, it is difficult to predict with accuracy what the state of technology will be several years down the line. Meticulously detailed predictions giving precise hard disk space, RAM capacity, and CPU speed as found in Somekh's (2000: 33-35) often miss the mark when variables change or 'revolutions' in the computing world occur. This is not the fault of any one person, but rather demonstrates how volatile the technology landscape is. To avoid this, I intend to forego the prophecy of how much RAM a typical user will need in the next two decades – though it will likely be a multiple of 8 – to focus on concepts that are being developed currently and how we might be careful in their utilisation given the Foucauldian concerns, namely:

- Omnipresent Power: That power is everywhere and cannot be destroyed.
- Panoptic Surveillance: The use of traditional (offline) and newly identified digital methods of observation, tracking, and clandestine data gathering.
- Disciplinary Power: The gaining of skills through prescribed activities, amongst others (Jardine, 2010: 70-74), even down to the time each action

should take as is dictated in schooling today through lesson times (Foucault, 1979: 151-153).

- The New Examiners: Machines taking on the role of the ‘examiner’.

Reports of new 5G wireless data connections have already been projected (BBC, 2015c) at speeds of ‘1 terabit per second’ (ibid.) which would make it over 60,000 times faster than current 4G mobile data speeds for the average person. It should be taken into consideration that this theoretical speed will drop with real world usage, but overall will still eclipse the current data connections. With Ofcom reporting that it could be available ‘by 2020’ (ibid.) the future of high speed Internet access looks set to change drastically across England (and the United Kingdom as a whole). This is because wireless connections of this kind would eliminate the need to lay new fibre optic cables every time one wishes to have a faster connection. The only limits would be coverage of rural areas – solvable by initially constructing enough data towers – and devices capable of achieving such speeds – mobile phones, data modules for laptops or desktops, and so on. The magnitude of this speed increase cannot be understated: it will change how the public communicates and if the initial costs are met to ‘blanket’ the country, as has been done in the past by private corporations during the 3G and 4G rollouts, will provide the United Kingdom with enough latency to meet the needs of the almost certainly more bandwidth intensive applications the next 20 to 30 years will bring.

Another large change in technology for the future requires considering research from over 12 years ago, to a seldom discussed computer program known as ‘Project Halo’ or more recently, the ‘Digital Aristotle’ (Friedland et al., 2004). Put simply the Digital Aristotle is ‘an application that will encompass much of the world’s scientific knowledge and can apply sophisticated problem solving to answer novel questions’

(Friedland et al., 2004: 29). Named after Aristotle due to his reported teaching ability, the application would change and adapt based on student needs and progress. Six years later, more progress was revealed as 'experts in physics, chemistry, and biology' could 'author a knowledge base and […] allow a different set of users to ask novel questions against that knowledge base' (Gunning, et al. 2010: 33). The project is moving forward steadily and was described in 2010 in the following way:

> An application containing large volumes of scientific knowledge and capable of applying sophisticated problem-solving methods to answer novel questions. As this capability develops, the project focuses on two primary applications: a tutor capable of instructing and assessing students and a research assistant with the broad, interdisciplinary skills needed to help scientists in their work (Gunning, 2010: 33).

It seems that the future of education will look vastly different to our current landscape and if such a program takes off it will likely be more cost effective than paying a teacher's salary with benefits and more personalised for the student than sitting in a classroom with 25 other children all trying to work at the same pace and for the same goals. I support such a project in theory but feel in keeping with the theme of this thesis that certain aspects of this prospective technology warrant analysis as well, so that we are aware of the conceivable power issues surrounding a digital tutor. It should be noted that the program is still in its early stages and subject to change so these concerns may have been addressed by the time it is released. I draw only upon the issues established in the past – as identified throughout this thesis – to assist in tackling disputes that may occur in the future. I make the same assumption, as did Foucault, that power cannot be destroyed and is always present (Foucault 1998: 63).

In 2015 I briefly wrote about how the Digital Aristotle could impact the field of ESL – my professional domain – and included some Foucauldian concerns (Chambers,

2015). Expanding upon them using my chosen Foucauldian terminology from this study and applying it to education in general would be the next step. I believe the biggest challenge facing students and teachers regarding a program that responds to one's questions with answers, and adapts based on one's needs, is that more than ever before monitoring and examining must take place. In fact, it is required to be a constant process of examination by observing and recording student progress. Not only that, it is likely that such an application would need to remember previously asked questions and answers to build up a personal relationship of sorts with the student. A goal of substituting for a living teacher – or replacing them entirely – would demand such immense databases and categorisations of students who may not be aware of the data gathering techniques the program possesses. This is not an unfounded fear, as many corporations such as Facebook, Google, and Microsoft collect a great amount of data, legally, by giving the user services after they opt-in to the collection method. For example, Google offers users real-time bus schedules, traffic updates, and estimated times to previously visited locations at the cost of constant monitoring of one's location through the GPS. Microsoft, through Windows 10, has unique advertising IDs for users which provide ads based on a user's browsing habits. An even more unnerving realisation, at least for me, is that unless this program will be controlled by an advanced artificial intelligence beyond what we can currently conjure, some human interaction will be necessary at the highest levels, feeding information into the program and possibly observing the categories and using this new tool to normalise established truths. A question enters one's mind: *Quis custodiet ipsos custodes?* – Who watches the watchmen? – A phrase today routinely taken out of its original Roman context and applied to tyrannical governments and police states. Extreme, perhaps, but just how would a program of

this nature be implemented? Would the ruling government, a group which I hope to have demonstrated thus far have inescapable agendas and biases, be in control as is the status quo of schooling today? Or would the private sector act as the examiners (Foucault, 1979: 185-187), bestowing their own truths with little, or perhaps a lot of oversight? Whenever technology capable of tracking users enters the equation, one must be sure that those being monitored are at least aware of their overseers and able to give informed consent to being tracked. This returns us to the *Literature Review* (Chapter 3) and what it means to be digitally literate. If being aware of the dangers or safety concerns of the online world is included within the definition, then users should be able to identify and react critically to the mass collection of personal data a digital tutor would require. I foresee such a warning being embedded in a Terms of Service (ToS) agreement that too many users would blindly click 'Agree' to, without reading, as happens with so many invasive measures today. Such an action is likely to remain the norm and students should be taught to observe and read (or even respond to) a ToS thoroughly, if for no other reason than to have more digitally aware populace. I am sceptical, however, that many people will opt to read such tomes, even if they did understand it, as to reject it, is to reject using the software or hardware itself. Few people are likely to do this as usually the ToS appears at the final stages in a process, usually just before the commitment to a product.

6.3. British Withdrawal from the European Union

On 23rd June 2016, the entire United Kingdom held a referendum on its membership of the European Union, resulting in the "Leave" side winning 51.9% - 48.1%. The

long-term effects of this are yet to be seen as, at the time of writing, the UK (as a whole) has until 29 March 2019 to leave the EU. In addition to economic factors, which currently have been felt in the short-term drop in the Pound's strength, many EU-wide laws and initiatives must be discussed and either continued, discarded, or replaced with British equivalents. The EU's policy on digital literacy – particularly through the European Commission's initiatives as discussed in a previous chapter – will, I expect, also be called into question as the respective governments of the UK will now have more power over what is taught in schools. The House of Lords and the Commons have placed digital skills high on the educational agenda so while a more sovereign Parliament will likely break away from many EU decisions, and it is likely that the focus on keeping up with the rest of the world in technological proficiency will continue, albeit on a different path towards the more unified continent. Time will tell what the outcome of this decision will mean for education in England as well as the rest of the UK.

6.4. Conclusion

With awareness now being drawn to the importance of digital skills, I am hopeful that many of the issues highlighted above will be avoided by the time such technology is at our doorstep. The Digital Aristotle is far enough away to prepare our students for any of my concerns and yet closer than one might think as artificial intelligence and computing power advances with each year. A final suggestion in keeping with the Foucauldian terminology in Chapter 4 is that the discourse and accepted knowledge of technology's role in education should constantly be reviewed. Technology over the years has been used to marginalise teachers' voices by successive disparate governments and lobbyist groups, whether through the sale of hardware to schools that are ill-equipped to use it or by placing teachers into a category of unadaptable technophobes. A healthy 'distrust' (Selwyn, 2014), i.e. a critical reading, should be applied to future policy decisions regarding integration of technology from teachers, students, and parents alike. This can be achieved through the systematic improvement of digital literacy skills enabling the previous groups to engage properly in the debate. This way we may avoid not only the mistakes identified in the Findings section (Chapter 5) but also address the techniques of control observed by Foucault.

Chapter 7: Limitations

The following section describes the various limitations of the study and how it could be improved through duplications or extensions of the project into broader topics and themes.

7.1. Time and Word Length

A natural and common limitation in research projects is the time constraint and word restriction. For me, it was not so much an issue with completing the thesis during a certain time frame, but balancing it with work and family commitments. On the side of the time frame, however, the necessity to complete the thesis in two years did place an artificial maximum on the amount of time allowed for reading and writing each chapter. This limit is self-inflicted as it was not deemed desirable to spend more than two years on research and writing before submission when so much of the work had already been done. It is likely that given an extra year or two more reading and in depth study could have been conducted but as technology advances so quickly, one runs the risk of certain information being obsolete. Then there is the task of deciding just how long to spend on a particular topic that eventually forces one to pick a timeframe for the project to be completed. Originally I was planning on an additional year of work but decided against it because of the above mentioned worries of currency.

Regarding word length, naturally research should be narrowed to fit within those constraints just as with time. Given unlimited word length and more time I believe I could have expanded the Foucauldian analysis into a broader look on society and how it affects education instead of relying on educational edicts and documents. Ideas that come to mind include a study of how gender and class might affect digital literacy skills from a Foucauldian perspective in order to complement the existing

studies that have been done on these matters. This was not the nature of the research, however, but something I (or others) could expand this research towards in the future.

7.2. Ability to Access Literature

The ability to access literature has been another limitation of this study. Journals that are available through the university's subscription service are simple and provide no restrictions – aside from the lack of open access on many of them. The largest challenge in this area is locating documents created decades ago by governments that have long been disbanded. Books, though not always up to date, have been the most difficult to obtain as it is not possible in my current job to easily access the University of Sheffield's physical library. The other solution is to purchase books, but this leads onto an issue identified in the next section.

7.3. Financial Limitations

An unforeseen problem which I touched upon in Section 7.2 was related to the gathering of old policy documents. Additionally, without an active university subscription to journals one requires, it soon becomes prohibitively expensive to purchase articles. I did not encounter this issue so much with journals as the university has subscriptions to many but with books which ranged from very little to buy used or far too much when used copies were not available. This is an issue I debated including in this section, but as it influenced which topics and themes I could research, I feel that it was necessary to do so. Certain books on this topic are priced

well above £100, which led to prioritisation of cheaper purchases and the possibility of missing out on research that was out of my price range. If I were to repeat this analysis I would like to dedicate more money into purchasing more books or at least, as was mentioned in 7.1, have more time to request the most expensive books be purchased by a library so I may read without restrictions. Thus, even with e-books theoretically democratising knowledge, I was limited in what I could look at despite my digital literacy skills and internet enabled computer access.

7.4. The Nature of the Study

It would be a mistake not to include a subsection here describing the benefits and problems with choosing a study of policy over one where interviews were conducted and questionnaires distributed. A huge challenge when writing a thesis of this nature is the seemingly inevitable reduction of the topic to my own voice rather than including others. It is this limitation I have attempted to avoid by including as much literature as possible that demonstrates opinions of teachers, students, and researchers while keeping the focus on policy texts. Unfortunately, this also came at the expense of a classroom observation to witness the theory in practice. On a more practical side, and while this was not the primary reason, an approach which did not require fieldwork was advantageous to my employment – which involves travelling a lot – and allowed me to avoid any unforeseen problems such as travelling back to England for follow up interviews if necessary. While I believe it has been a thorough analysis, I acknowledge that further research necessitates participatory quantitative and qualitative research, particularly from the policy makers themselves in addition to teachers and students. I do hope to follow on with this research in the future and

interview politicians involved in decision making along with viewing digital skills being taught after the House of Lords recommendations.

Chapter 8: Conclusion

8.1. A Recap

This thesis has covered an area of education which I originally believed to have been merely lacking in scope and utilisation. This was based on my own experiences of technology usage in high school combined with postgraduate research projects into how technology was used. Reading into the history of digital literacy shows another angle to the debate: one of technology being haphazardly thrust upon schools as a political tool to appear modern was initially identified by researchers in the 80s. The definition of what it means to be digitally literate, as utilised by this thesis, did not exist when the national curriculum was created in 1988 and upon its first mainstream usage in 1997 (Gilster, 1997) has become many things to many people. I do not expect that any new definitions or changes that I have offered during this work will be thought of as the new standard. A joke in the computer science field is if one finds nine competing ways of doing the same thing, an attempt to make an industry standard only results in there being ten competing ways of doing the same thing.

The Internet remains largely unregulated and 'forming a balanced assessment by distinguishing between content and its presentation' (Gilster, 1997: 3) is still required. To do this would entail the utilisation of existing power structures – usually governmental – to develop training for current and new generations. The genuine need for this has been exploited in the past, as shown in Chapters 3 and 5, to further political aspirations. Seeing digital literacy merely as a goal for politicians to remain in power is quite a bleak outlook. It has been shown in this thesis that it is not legislators that drive the need for new skills, but business, economics, and the interests of the public. Politicians, as many of the cited papers show, can push for these skills to be taught but they are simply responding to the outside world's

demand for them. With this power, however, comes the ability to manipulate knowledge and truth. By changing the discourse regarding computer usage, those using power can influence knowledge and normalise thinking towards their own agendas. This is how lucrative computer hardware contracts were created during the 1980s without useful software and why books are written in response about distrusting educational technology (Selwyn, 2014). A consistently marginalised voice during these ongoing policy changes have been the teachers, particularly ones who grew up and taught for years before the sudden push for technology integration. By using divisive methods of separating people into us against them, new against old, Digital Native against Digital Immigrant (Prensky, 2001a, 2001b), those in control have their normalising technique to offer rewards and punishments to teachers and through funding initiatives, schools.

Foucault's concept of The Gaze and Panopticon (Foucault, 1979: 171) in this new technologically enhanced world gives me the most cause for alarm. The Super-Panopticon (Poster, 1990, 1995) concept of the past has mutated into something far greater – or at least the possibilities are there and exploited beyond anything that existed in the early 1990s. Throughout the policy analysis there was mention of becoming critical and documents prescribing online safety training for students from a young age. I very much agree with this but what I find to be lacking is any serious indication of privacy training for the same students. This differs from the simple cyberbullying awareness campaigns which are welcome and entirely necessary. Students should be taught not to give out personal information to people they have met online, without a thorough assessment of the situation, and to be aware (through the critical digital techniques taught in schools) of how to assess claims before meeting said anonymous people in real life. What I would like to see is a direct

challenge to this new Panopticon. A serious consideration into the indispensable digital literacy component questioning the safety of using certain applications, which are closed off to users and where anything could be hiding in the code, is essential. This is by no means a new complaint (Poster, 1990), and Selwyn (2014: 64-83) has rightly pointed out the existing issues of power within the opposite 'open' technologies, albeit in a far more negative point of view than my own (See Chapter 3, *Literature Review*). My contention is that there is not even any time dedicated to teaching students to look after their personal data from closed-source or open-source software. Not to mention a discussion on power and politics (Selwyn, 2014: 82) present in these two kinds of program.

8.2. Answering the Research Questions and Contributions to the Field

To help recap the Research Questions, I have restated them for the final time:

1: *"How has digital literacy been defined and implemented by policy steering?"*
2: *"What have been the effects of policy suggestions and decisions on practice?"*
3: *"How has research influenced policy decisions?"*

8.2.1. Research Question 1

The findings in Chapter 5 identified the multitude of interferences in education on the part of governments throughout the past three decades. From the introduction of the National Curriculum in 1988, this was to be expected. Policy steering through levers and drivers show a commitment of governments to respond to their respective conclusions on where the constituent countries of the UK should have been heading on the technology in education front. The early years, ignoring much negative

research on the topic (or selecting researchers promising ambitious targets), saw an education department dedicated to schools purchasing hardware at the expense of software and support packages for institutions. Though the successive governments since then adapted to the changing educational landscape, the resulting call from the House of Lords select committee demonstrated a desperation to achieve standards that echoes similar problems identified throughout the previous 30 years. Namely, teachers still do not have the skills necessary to meet government targets and the United Kingdom (as a whole) risks being left behind on the world stage. While these assessments of the current situation are not falsehoods per se, the Foucauldian analysis demonstrates that such classifications have been used in the past for the objectification of individuals, restricting them to government-approved methods. Researchers should remain vigilant of such techniques of hierarchical surveillance and control, combined with normalising techniques in the future.

8.2.2. Research Question 2

To restate, the shift from a hardware focus, to all-round inclusive software and support, modified the culture of the classroom. Teachers have provided evidence that teacher identities have been affected (Burnett, 2011) by an unbalancing of power through access to knowledge; pupils' easy access to information via computers has destabilised teachers' positions as the key source of knowledge. The normalisation of the new skills required – based on targeted usage of technology in education – were met with punishments and rewards. Those teachers open to change, and the established educators who went along with it, adapted more easily to this cultural switch to so-called '21st century' teaching.

Policy decisions and suggestions have a major effect on practice that cannot be ignored. Normalisation through ranking was also a component of policy with ‘Advanced Skills Teachers’ (Great Britain. Great Britain. Department for Education and Employment 2001a: 73) remunerated with far higher salaries. These incentives, while often positive, still helped normalise preferred techniques through classification of teachers.

8.2.3. Research Question 3

The effect of research on digital literacy policy choices has improved in recent years. The earliest years in the scope of this study uncovered the flouting of apprehensive researchers by the government, preferring instead to simply hire those who promised the best, and often, most unattainable returns. By the 2000s it was apparent that policy makers were considering research conducted by those both for and against technology integration – though it is not clear whether they were simply ignoring the most negative of commentators. After 2010, the government began utilising companies and foundations which received government funding to conduct research of their own. With the expansion of the Internet onto personal devices and with broadband allowing a constant online presence, the government has taken steps to maximise safety online, though more could be done to inform citizens of all ages. For example, the recommendations based on research currently only extend to e-safety regarding speaking to strangers online and disruption of cyberbullying. These steps are important as more and more personal data is being voluntarily submitted by website users with little regard for or knowledge of who is holding the data. The government could do more to inform students and teachers of other hidden observers who may be watching and mining data, which could be integrated into a

primary school class as part of digital literacy training. The government's stance on encryption, that of being acutely against such technologies, should be thought of as problematic to all concerned about online safety. In a world of increasingly important online interactions and cybercrime, it would not be advisable to openly disregard such an important topic for students. Researchers should observe such stances with suspicion, and speak out where appropriate.

8.3. An Evaluation of the Methodology

In selecting the methodology for the thesis in Chapter 4, I had to filter through much of Foucault's work. Luckily it is encouraged by Foucault himself that users of his work should only take what they deem necessary, for which I am grateful, and this is known, both in this analysis and elsewhere as a tool-kit (Walzer, 1983: 481), or sometimes tool-box (Allen, 2012), approach. This allowed me to take four key components and create an analysis of where digital literacy was historically and where it may be heading in the future. The approach I took was a necessary decision to limit the amount of analysing that could be achieved in the time frame allowed, as mentioned in Chapter 7 – Limitations of the Study. Where I believe the methodology could be improved relates to the issues mentioned in the previous chapter – more time and available words would have allowed a greater focus on concepts such as 'theoretical reductionisms' (Foucault, 1980: 135). That is, addressing researchers, teachers, or policy makers who state that if an idea had been implemented in a more precise manner, problems could have been avoided. I have avoided providing this kind of criticism as it blames an individual for problems rather than the policy itself. In the case of digital literacy, it is often presupposed that technology continues to change the way we interact with the world and also presumed that this is not going

away. It is only going to get more and more influential in our lives. This is the presumption that policy makers act upon when pushing for changes in the school system and once this conclusion is anticipated, failure to meet goals is often seen as a failure of people rather than the policies. Therefore, it was deemed more important to focus on the methodology and analysis as found in Chapters 4 and 5.

Regarding Foucault, before commencing the doctorate four years ago, I had read little about his philosophical writings and was certainly not planning to utilise his work in Part 1 of the programme. After more exploratory reading, however, I am glad I could expand my knowledge into the kind of reflective thinking that Foucault provides. I now think about power and knowledge in a vastly different way and reading his work has altered my assumptions about how the world operates. I must include the same statement for both Bourdieu and Habermas as looking at Foucault's work also required delving into their respective theories. On a personal level, the last four years has been a series of reflexive practices in which I had to challenge many of my assumptions and examine my personal epistemology. When it came to the analysis itself, I believe that the techniques of analysis taken from Foucault's work, as identified in the preceding chapters, were beneficial. From my reading of the literature, and through the call for research on the topic (Selwyn & Facer, 2014), I have added a new perspective towards analysing digital literacy policy: looking at it through a Foucauldian lens. This is not to say that Foucault's work was perfect for this; I found, whether through the design of Foucault's analysis techniques or through fault of my own, very few solutions from Foucault himself. Indeed, critique is one part of problem analysis but so is problem-solving. Foucault appears to be focused so much on subjective reflection that general solutions are

absent. This would be described in the computing world as a ‘feature, not a bug’, as it was by design that Foucault avoided offering solutions:

> I absolutely will not play the part of one who prescribes solutions (Foucault, 1991: 157).

This choice has been justified by at least one author by saying that solutions can: ‘be presumptuous’, ‘reproduce problems’, and ‘be condescending’ (Fendler, 2014). As a postmodernist choice (although Foucault did not like being called this), I can understand, but it still becomes an issue when one has to shift away from the theory to offer a personal solution. To use computing language: it is a ‘feature’ that could be patched in the next release, though it would take away from what is quintessentially Foucauldian about Foucault.

With that said, and as I mentioned above, one could just as easily conduct this analysis from the perspective of Habermas or Bourdieu, using their framing of policy to offer suggestions. I considered these three theorists and do not regret my decision to choose Foucault. It is his work that most aligns with my thinking at the current time, though I am open to change upon further reading.

The use of Foucault for analysis in education is not a new contribution, but as far as I can tell, it is original to use his work specifically on digital literacy policy. This could be down to digital literacy now coming into its own as a subject to be taken seriously by governments, though basic skills related to computers have been pushed by governments for decades. The analysis I provide is an attempt to assist in the abovementioned call for more critical research into the usefulness of digital literacy and to help to be one of the ‘more engaged’ (Selwyn & Facer, 2014: 491) researchers in this field.

8.4. A Final Note

In the Introduction (Chapter 1) I gave a detailed value statement sketching out my background to this topic and to frame where I was coming from. I identified that I was pro-technology for educational purposes, quite fond of using it in my daily life, and skilled at doing so. I also expressed my initial feelings before conducting the research that the education system in England was lacking in digital areas. This was based on my personal interaction as a student, teacher, and researcher in this system. After conducting this research, my views have changed. An obvious major influence has been Foucault as reading his works has changed the way I see the world. Another is researchers like Selwyn whose shifting scepticism to palpable distrust of technology in all its forms has made me question my original position and placed me into a point of self-reflection. I am still for greater technology and digital literacy improvements within England and the entire United Kingdom under the presupposition that technology will not 'retreat'. I do not, however, see it as the great panacea I once did. This thesis reflects my thinking on the subject: digital literacy should be a central focus on the road to the future, but it is crucial to evaluate and influence policy from a critical viewpoint.

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